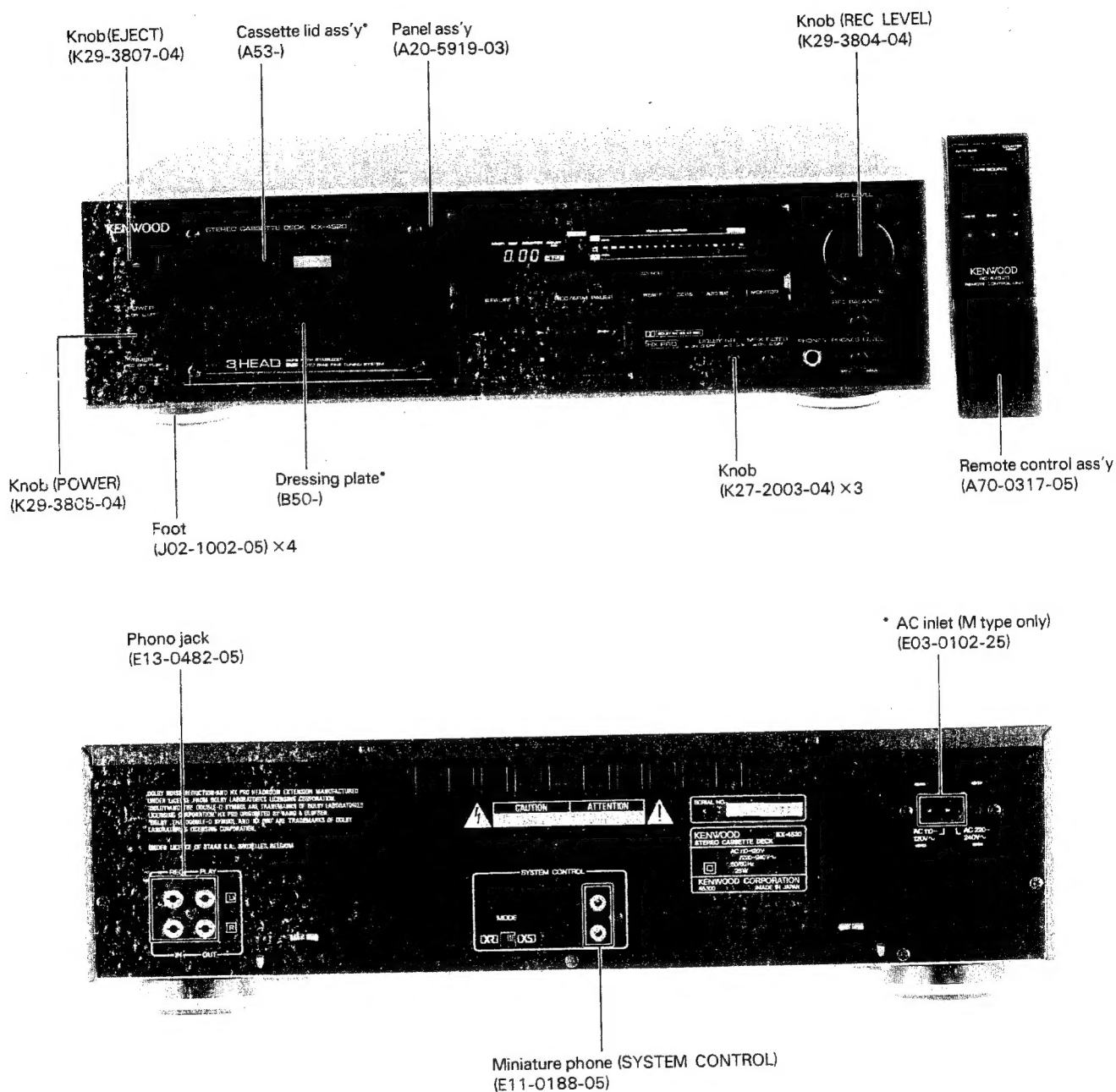


KX-4520

SERVICE MANUAL

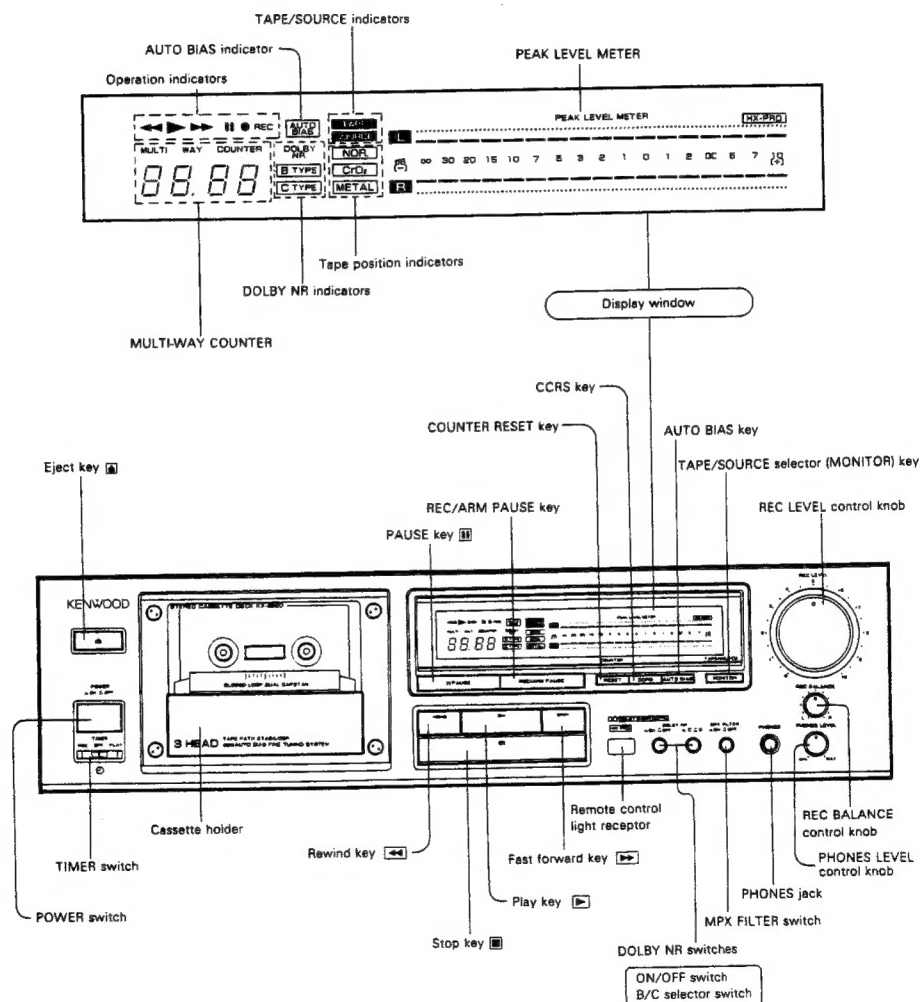
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CONTROL AND INDICATORS



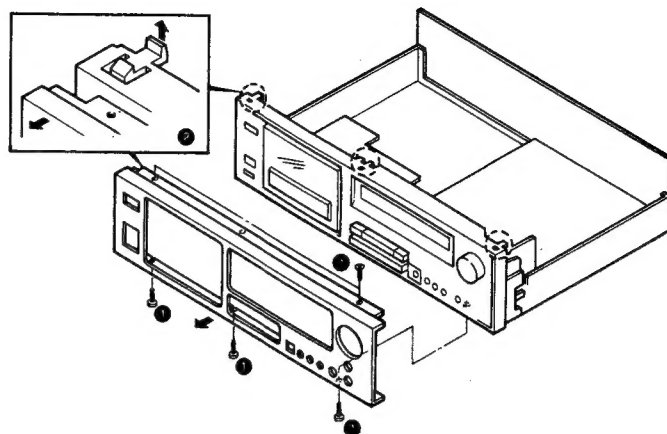
Note on counter's preciseness

The linear tape counter used with this unit is not a clock, and there is a certain error between the displayed time and real recording time (this is unavoidable because this unit has been designed to be capable of displaying tape time also during fast forward and rewind operations as well as during recording and playback). The degree of this error is dependent on the type of tape.

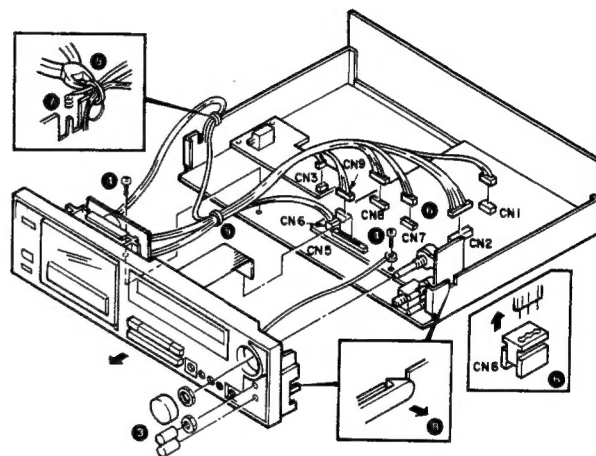
BLOCK LEVEL DIAGRAM

* Take out the case in advance.

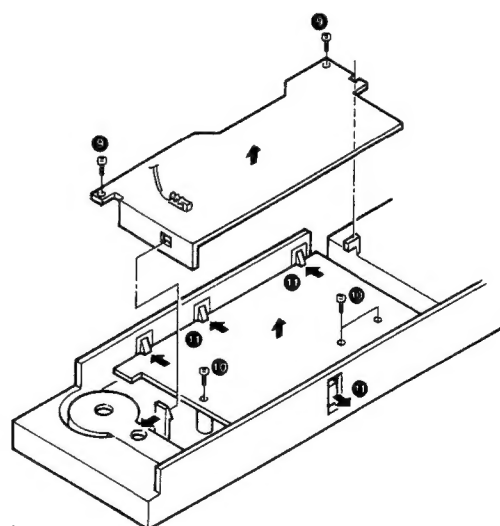
1. Remove the five screws **1**.
2. Undo the three catches **2**, and detach the front panel.



3. Remove the three knobs and two nuts **3**.
4. Remove the two screws **4**.
5. Cut the two convexas **5**.
6. Disconnect the eight connectors **6**.
7. Unground **7**.
8. Undo the two catches at the both sides, and detach the sub panel **8**.



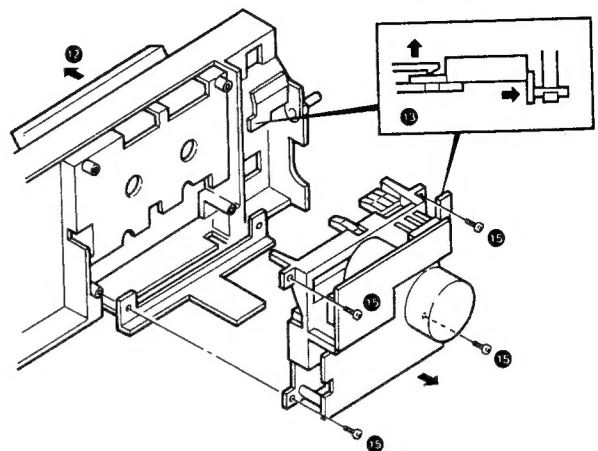
9. Remove the two screws **9**, and detach the shield plate.
10. Remove the three screws **10**.
11. Undo the four catches **11**, and disconnect the board.



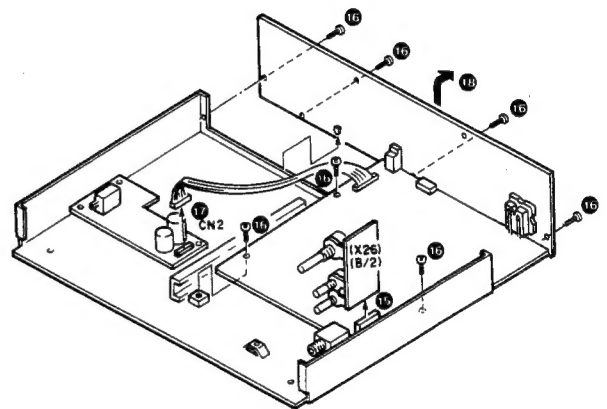
KX-4520

DISASSEMBLY FOR REPAIR

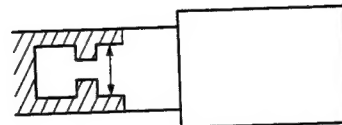
12. Press the eject button to open the cassette holder ⑫.
13. Set aside the eject lever to the left side ⑬.
(When detaching, draw it out in the upper left direction.)
14. Remove the four screws ⑭, and take out the mechanism.



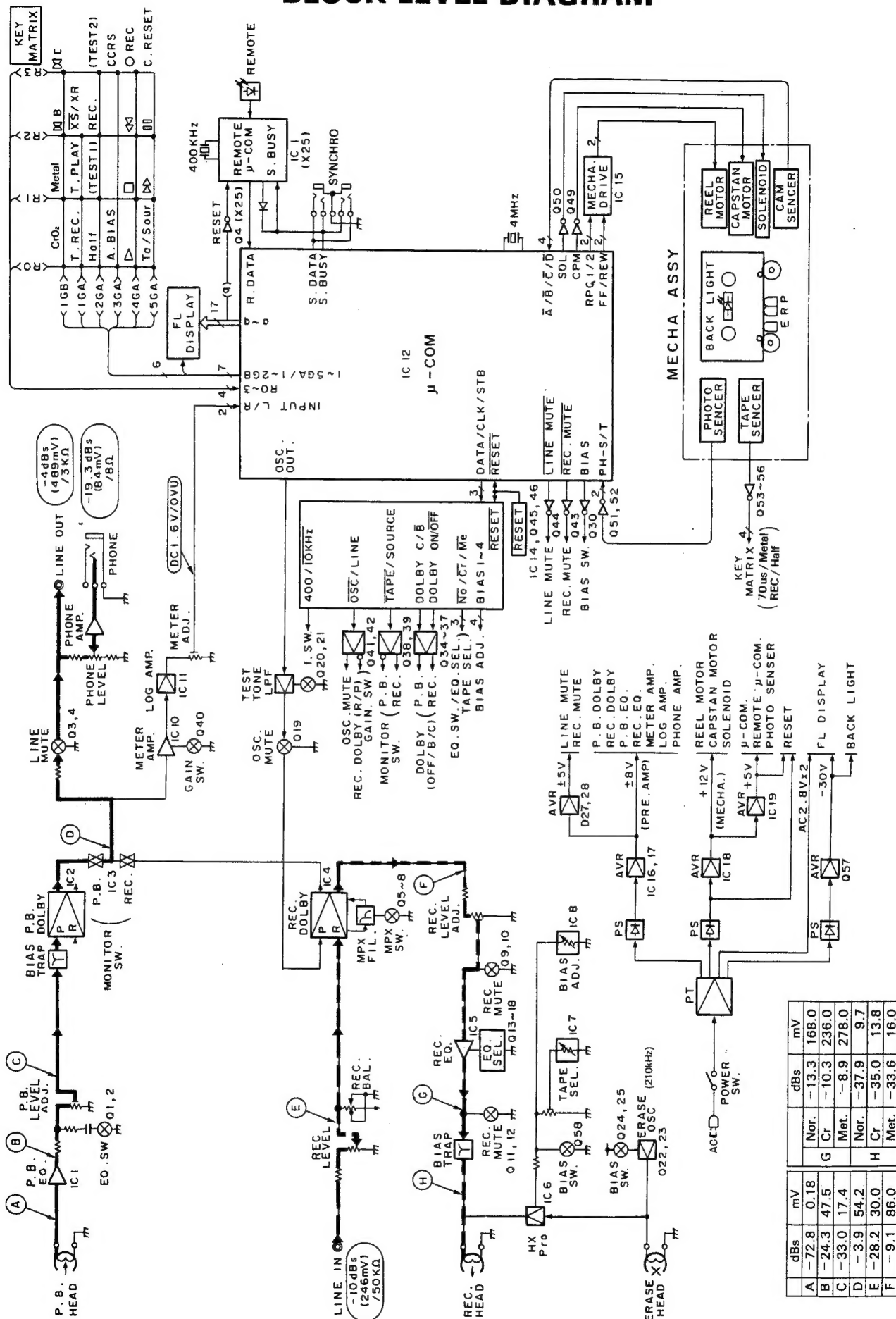
15. Disconnect the board (X26) (B/2) ⑮.
16. Remove the seven screws ⑯.
17. Disconnect the connector ⑰.
18. Draw up the board together with the rear panel rearwards.



19. When detaching the knob of the power switch, open slightly the portion indicated by arrows using a lead punch, etc.



BLOCK LEVEL DIAGRAM



CIRCUIT DESCRIPTION

Description of component
Cassette unit (X26-1240-00)

Component(s)	Name	Use/function	Operation/condition/compatibility																		
Q1, 2	2SC1740S (Q, R) 2SC945 (A) (Q, P)	Playback EQ time constant selection switch	<p>Selects between 120 μsec and 70 μsec of playback EQ high-frequency time constants</p> <table><tr><th>Tape</th><th>Q1, 2</th><th>Time constant</th></tr><tr><td>Normal</td><td>OFF</td><td>3180~120 (μsec)</td></tr><tr><td>Chrome</td><td>ON</td><td>3180~ 70 (μsec)</td></tr><tr><td>Metal</td><td>ON</td><td>3180~ 70 (μsec)</td></tr></table>	Tape	Q1, 2	Time constant	Normal	OFF	3180~120 (μ sec)	Chrome	ON	3180~ 70 (μ sec)	Metal	ON	3180~ 70 (μ sec)						
Tape	Q1, 2	Time constant																			
Normal	OFF	3180~120 (μ sec)																			
Chrome	ON	3180~ 70 (μ sec)																			
Metal	ON	3180~ 70 (μ sec)																			
Q3, 4	2SC2878 (B) 2SD1302 (S, T)	Line mute switch	<p>For recording or playing source, the pin 10 (LM) of microprocessor IC12 becomes "H" and Q44 thereby turns OFF so that Q3 and Q4 turn OFF.</p> <table><tr><th>MODE</th><th>LM</th><th>Q44</th><th>Q3, 4</th></tr><tr><td>REC · PLAY · SOURCE</td><td>H</td><td>OFF</td><td>OFF</td></tr><tr><td>OTHER</td><td>L</td><td>ON</td><td>ON</td></tr></table>	MODE	LM	Q44	Q3, 4	REC · PLAY · SOURCE	H	OFF	OFF	OTHER	L	ON	ON						
MODE	LM	Q44	Q3, 4																		
REC · PLAY · SOURCE	H	OFF	OFF																		
OTHER	L	ON	ON																		
Q5~8	2SC1740S (Q, R) 2SC945 (A) (Q, P)	MPX filter switch	<p>An "H" or "L" signal is output according to the "ON" or "OFF" operation of the MPX filter switch (S1-C/3: X25-3770 system) so that Q5~Q8 turn ON or OFF. When Q5~Q8 turn ON, the MPX filter works.</p>																		
Q9~12	2SC2878 (B) 2SD1302 (S, T)	Recording mute switch	<p>For recording, the pin 11 (RM) of microprocessor IC12 becomes "H" and Q43 thereby turns OFF so that Q9~Q12 turn OFF.</p> <table><tr><th>MODE</th><th>RM</th><th>Q43</th><th>Q9~12</th></tr><tr><td>REC</td><td>H</td><td>OFF</td><td>OFF</td></tr><tr><td>OTHER</td><td>L</td><td>ON</td><td>ON</td></tr></table>	MODE	RM	Q43	Q9~12	REC	H	OFF	OFF	OTHER	L	ON	ON						
MODE	RM	Q43	Q9~12																		
REC	H	OFF	OFF																		
OTHER	L	ON	ON																		
Q13, 14	2SC1740S (Q, R) 2SC945 (A) (Q, P)	Recording EQ chrome switch	<p>When a chrome tape is loaded, the pin 10 (C) of extension IC IC13 becomes "L" and Q32 thereby turns ON so that Q13 and Q14 turn ON.</p>																		
Q15, 16	2SC1740S (Q, R) 2SC945 (A) (Q, P)	Recording EQ metal switch	<p>When a metal tape is loaded, the pin 9 (M) of extension IC IC13 becomes "L" and Q33 thereby turns ON so that Q15 and Q16 turn ON.</p>																		
Q17, 18	2SC1740S (Q, R) 2SC945 (A) (Q, P)	Recording EQ peaking selection switch	<p>When a normal tape is loaded, the pin 11 (N) of extension IC IC13 becomes "L" and Q31 thereby turns ON, while when a chrome tape is loaded Q32 turns ON in the same process, so that, either way, Q17 and Q18 turn ON through a diode matrix D5 and D6.</p> <table><tr><th>Tape</th><th>Q17, 18</th></tr><tr><td>Normal</td><td>ON</td></tr><tr><td>Chrome</td><td>ON</td></tr><tr><td>Metal</td><td>OFF</td></tr></table>	Tape	Q17, 18	Normal	ON	Chrome	ON	Metal	OFF										
Tape	Q17, 18																				
Normal	ON																				
Chrome	ON																				
Metal	OFF																				
Q19	2SC1740S (Q, R) 2SC945 (A) (Q, P)	Test signal mute switch	<p>For AUTO BIAS operation, the pin 5 (O/L) of extension IC IC13 becomes "L" and Q19 thereby turns OFF to pass the test signal. Except for AUTO BIAS operation, Q19 is ON.</p>																		
Q20, 21	2SC1740S (Q, R) 2SC945 (A) (Q, P)	Test signal filter cutoff frequency selection switch	<p>For AUTO BIAS operation, selects between cutoff frequencies in synchronization with the test signal frequency.</p> <table><tr><th>Frequency</th><th>400/10k IC13 pin 6</th><th>Q20, 21</th></tr><tr><td>400 Hz</td><td>H</td><td>ON</td></tr><tr><td>10 kHz</td><td>L</td><td>OFF</td></tr></table> <p>Except for AUTO BIAS operation, Q20 and Q21 are OFF.</p>	Frequency	400/10k IC13 pin 6	Q20, 21	400 Hz	H	ON	10 kHz	L	OFF									
Frequency	400/10k IC13 pin 6	Q20, 21																			
400 Hz	H	ON																			
10 kHz	L	OFF																			
Q22, 23	2SD863 (E, F)	Erase head excitation	<p>For recording, a push-pull oscillation is made at f=210 kHz to flow the erase current and the bias current.</p>																		
Q24	2SC3246	BIAS+B ON/OFF switch	<p>For recording, the pin 25 (BIAS) of microprocessor IC12 becomes "H" and Q30 thereby turns OFF and Q25 OFF so that Q24 turns ON to apply +B to the erase oscillator and the HX excitation coil.</p> <table><tr><th></th><th>BIAS</th><th>Q30</th><th>Q25</th><th>Q58</th><th>Q24</th></tr><tr><td>REC</td><td>H</td><td>OFF</td><td>OFF</td><td>OFF</td><td>ON</td></tr><tr><td>OTHER</td><td>L</td><td>ON</td><td>ON</td><td>ON</td><td>OFF</td></tr></table>		BIAS	Q30	Q25	Q58	Q24	REC	H	OFF	OFF	OFF	ON	OTHER	L	ON	ON	ON	OFF
	BIAS	Q30	Q25	Q58	Q24																
REC	H	OFF	OFF	OFF	ON																
OTHER	L	ON	ON	ON	OFF																
Q25	DTC124ES	Bias ON/OFF switch	<p>For recording, Q25 turns OFF to let the bias ON.</p>																		

CIRCUIT DESCRIPTION

Component(s)	Name	Use/function	Operation/condition/compatibility																																			
Q26~29	DTA124ES	Bias step driver	<p>For AUTO BIAS operation, the bias current is varied to correct the tape recording/playback frequency response. (MAX. 16 steps) Due to the "H"/"L" action of the pins 1~4 (B1~B4) of extension IC IC13, transistors Q26~Q29 turn OFF/ON so that the transistor of IC8 turn OFF/ON to vary the bias current.</p> <table><tr><td></td><td>Extension IC (IC13)</td><td>Driver</td><td>ATT switch (IC8)</td></tr><tr><td>MSB</td><td>B4 (P4): H/L</td><td>Q29: OF/ON</td><td>INVERTER 1: OFF/ON</td></tr><tr><td>3SB</td><td>B3 (P3): H/L</td><td>Q28: OF/ON</td><td>INVERTER 2: OFF/ON</td></tr><tr><td>2SB</td><td>B2 (P2): H/L</td><td>Q27: OF/ON</td><td>INVERTER 3: OFF/ON</td></tr><tr><td>LSB</td><td>B1 (P1): H/L</td><td>Q26: OF/ON</td><td>INVERTER 4: OFF/ON</td></tr></table> <p>Initial value B4—"L" Q29=ON INVERTER 1=ON B1~3—"H" Q26~28=OFF INVERTER 2~4=OFF</p>		Extension IC (IC13)	Driver	ATT switch (IC8)	MSB	B4 (P4): H/L	Q29: OF/ON	INVERTER 1: OFF/ON	3SB	B3 (P3): H/L	Q28: OF/ON	INVERTER 2: OFF/ON	2SB	B2 (P2): H/L	Q27: OF/ON	INVERTER 3: OFF/ON	LSB	B1 (P1): H/L	Q26: OF/ON	INVERTER 4: OFF/ON															
	Extension IC (IC13)	Driver	ATT switch (IC8)																																			
MSB	B4 (P4): H/L	Q29: OF/ON	INVERTER 1: OFF/ON																																			
3SB	B3 (P3): H/L	Q28: OF/ON	INVERTER 2: OFF/ON																																			
2SB	B2 (P2): H/L	Q27: OF/ON	INVERTER 3: OFF/ON																																			
LSB	B1 (P1): H/L	Q26: OF/ON	INVERTER 4: OFF/ON																																			
Q30	2SA733 (A) (Q, P) 2SA933S (Q, R)	Bias ON/OFF driver	Refer to the pertinent description under Q24.																																			
Q31~33	DTA124ES	Tape selector driver	<table><tr><td></td><td colspan="3">Extension IC (IC12)</td><td colspan="3">Driver</td></tr><tr><td></td><td>N (pin 11)</td><td>C (pin 10)</td><td>M (pin 9)</td><td>Q31</td><td>Q32</td><td>Q33</td></tr><tr><td>Normal</td><td>L</td><td>H</td><td>H</td><td>ON</td><td>OFF</td><td>OFF</td></tr><tr><td>Chrome</td><td>H</td><td>L</td><td>H</td><td>OFF</td><td>ON</td><td>OFF</td></tr><tr><td>Metal</td><td>H</td><td>H</td><td>L</td><td>OFF</td><td>OFF</td><td>ON</td></tr></table> <p>Due to the "H"/"L" action of pins 11 (N), 10 (C) or 9 (M) of extension IC IC13 depending upon the tape loaded on the deck, the tape selector driver's Q31, Q32 or Q33 turns ON for a normal, chrome or metal tape, respectively.</p>		Extension IC (IC12)			Driver				N (pin 11)	C (pin 10)	M (pin 9)	Q31	Q32	Q33	Normal	L	H	H	ON	OFF	OFF	Chrome	H	L	H	OFF	ON	OFF	Metal	H	H	L	OFF	OFF	ON
	Extension IC (IC12)			Driver																																		
	N (pin 11)	C (pin 10)	M (pin 9)	Q31	Q32	Q33																																
Normal	L	H	H	ON	OFF	OFF																																
Chrome	H	L	H	OFF	ON	OFF																																
Metal	H	H	L	OFF	OFF	ON																																
Q34, 36	DTA124ES	DOLBY NR mode selection switch	<p>To provide the DOLBY noise reduction mode selected by the DOLBY NR ON/OFF and B/C switches (S1-a/3, b/3: X25-3770 system), due to the "H"/"L" action of the pin 8 (DOLBY ON/OFF) of extension IC IC13, Q36 and Q37 turn OFF/ON, while due to the "H"/"L" action of the pin 7 (DOLBY C/B), Q34 and Q35 turn OFF/ON. Thus, the DOLBY noise reduction mode is determined by "H"/"L" combination.</p> <table><tr><td>DOLBY</td><td>DOLBY ON/OFF</td><td>DOLBY C/B</td><td>Q34</td><td>Q35</td><td>Q36</td><td>Q37</td></tr><tr><td>OFF</td><td>L</td><td>L</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr><tr><td>B</td><td>H</td><td>L</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td></tr><tr><td>C</td><td>H</td><td>H</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td></tr></table>	DOLBY	DOLBY ON/OFF	DOLBY C/B	Q34	Q35	Q36	Q37	OFF	L	L	OFF	OFF	ON	ON	B	H	L	OFF	OFF	OFF	OFF	C	H	H	ON	ON	OFF	OFF							
DOLBY	DOLBY ON/OFF	DOLBY C/B	Q34	Q35	Q36	Q37																																
OFF	L	L	OFF	OFF	ON	ON																																
B	H	L	OFF	OFF	OFF	OFF																																
C	H	H	ON	ON	OFF	OFF																																
Q35, 37	DTA124ES																																					
Q38	DTA124ES	Tape/source selection control	<p>Due to the "L"/"H" action of the pin 9 (T/S) of extension IC IC13, Q38 and Q39 turn ON/OFF to apply an "H"/"L" signal to the control pin of monitor selection analog switch IC3.</p> <table><tr><td>MODE</td><td>T/S</td><td>Q38</td><td>Q39</td><td>IC3</td><td>Pins. 12 and 13 of IC3</td></tr><tr><td>TAPE</td><td>L</td><td>ON</td><td>ON</td><td>5 V</td><td>-8 V</td></tr><tr><td>SOURCE</td><td>H</td><td>OFF</td><td>OFF</td><td>-8 V</td><td>8 V</td></tr></table>	MODE	T/S	Q38	Q39	IC3	Pins. 12 and 13 of IC3	TAPE	L	ON	ON	5 V	-8 V	SOURCE	H	OFF	OFF	-8 V	8 V																	
MODE	T/S	Q38	Q39	IC3	Pins. 12 and 13 of IC3																																	
TAPE	L	ON	ON	5 V	-8 V																																	
SOURCE	H	OFF	OFF	-8 V	8 V																																	
Q39	DTC124ES																																					
Q40	2SC1740S (Q, R) 2SC945 (A) (Q, P)	Meter amplifier gain selection switch	For AUTO BIAS operation, Q40 turns ON to raise the meter amplifier R-ch gain. The AUTO BIAS test signal (-20 VU) is thus amplified for easier microprocessor level discrimination. Except for AUTO BIAS operation, Q40 is OFF.																																			
Q41	DAT124ES	Test signal/line signal selection driver	<p>For AUTO BIAS operation, the pin 5 (O/L) of extension IC IC13 becomes "L" so that Q41 goes ON to turn Q40 and Q42 ON.</p> <table><tr><td></td><td>O/L</td><td>Q41</td><td>Q40</td><td>Q42</td></tr><tr><td>AUTO BIAS</td><td>L</td><td>ON</td><td>ON</td><td>ON</td></tr><tr><td>OTHER</td><td>H</td><td>OFF</td><td>OFF</td><td>OFF</td></tr></table>		O/L	Q41	Q40	Q42	AUTO BIAS	L	ON	ON	ON	OTHER	H	OFF	OFF	OFF																				
	O/L	Q41	Q40	Q42																																		
AUTO BIAS	L	ON	ON	ON																																		
OTHER	H	OFF	OFF	OFF																																		
Q42	DTC124ES	Test signal selection switch	To pass the test signal in AUTO BIAS operation for recording DOLBY IC IC4, Q42 turns ON to select an input line.																																			
Q43	2SA733 (A) (Q, P) 2SA933 (Q, R)	Recording mute drive	Controlled by the output of the pin 11 (RM) of microprocessor IC12. Also refer to the pertinent description under Q9~Q12.																																			
Q44	2SA733 (A) (Q, P) 2SA933 (Q, R)	Line mute drive	Controlled by the output of the pin 10 (LM) of microprocessor IC12. Also refer to the pertinent description under Q3 and Q4.																																			

CIRCUIT DESCRIPTION

Component(s)	Name	Use/function	Operation/condition/compatibility																														
Q45, 46	2SC1740S (Q, R) 2SC945 (A) (Q, P)	Microprocessor reset	At POWER ON/OFF, apply "L" to the pin 27 (RESET) of microprocessor IC12 and the pin 16 (RST) of extension IC IC13 to reset. <table><tr><td></td><td>Right after POWER ON</td><td>Right after POWER OFF</td></tr><tr><td>Q45</td><td>ON</td><td>OFF</td></tr><tr><td>Q46</td><td>OFF after a fixed time of ON</td><td>OFF after a fixed time of ON</td></tr></table>		Right after POWER ON	Right after POWER OFF	Q45	ON	OFF	Q46	OFF after a fixed time of ON	OFF after a fixed time of ON																					
	Right after POWER ON	Right after POWER OFF																															
Q45	ON	OFF																															
Q46	OFF after a fixed time of ON	OFF after a fixed time of ON																															
Q47, 48	2SC1740S (Q, R) 2SC945 (A) (Q, P)	Reel motor applied voltage selection switch	Due to the "H"/"L" action of the pins 14 (RPC1) and 15 (RPC2) of microprocessor IC12, Q47 and Q48 turn ON/OFF to vary the voltage applied to the pin 4 of reel motor driver IC IC15 in such a manner that it becomes 8 V for assist, 6 V for fast forwarding or rewinding or 3.5 V for play or recording. <table><tr><th>Reel motor mode</th><th>RPC1</th><th>RPC2</th><th>Q47</th><th>Q48</th><th>4 Pin voltage</th></tr><tr><td>Assist</td><td>L</td><td>L</td><td>OFF</td><td>OFF</td><td>8.4 V</td></tr><tr><td>FF · REW</td><td>L</td><td>H</td><td>ON</td><td>OFF</td><td>7.0 V</td></tr><tr><td>PLAY · REC</td><td>H</td><td>L</td><td>OFF</td><td>ON</td><td>4.3 V</td></tr><tr><td>OTHER</td><td>L</td><td>L</td><td>OFF</td><td>OFF</td><td>8.4 V</td></tr></table>	Reel motor mode	RPC1	RPC2	Q47	Q48	4 Pin voltage	Assist	L	L	OFF	OFF	8.4 V	FF · REW	L	H	ON	OFF	7.0 V	PLAY · REC	H	L	OFF	ON	4.3 V	OTHER	L	L	OFF	OFF	8.4 V
Reel motor mode	RPC1	RPC2	Q47	Q48	4 Pin voltage																												
Assist	L	L	OFF	OFF	8.4 V																												
FF · REW	L	H	ON	OFF	7.0 V																												
PLAY · REC	H	L	OFF	ON	4.3 V																												
OTHER	L	L	OFF	OFF	8.4 V																												
Q49	2SC3246	Capstan motor ON/OFF switch	For recording or play, the pin 13 (CPM) of microprocessor IC12 becomes "H" so that Q49 turns ON to rotate the capstan motor. <table><tr><th>MODE</th><th>CPM</th><th>Q49</th></tr><tr><td>REC · PLAY</td><td>H</td><td>ON</td></tr><tr><td>OTHER</td><td>L</td><td>OFF</td></tr></table>	MODE	CPM	Q49	REC · PLAY	H	ON	OTHER	L	OFF																					
MODE	CPM	Q49																															
REC · PLAY	H	ON																															
OTHER	L	OFF																															
Q50	2SC3246	Solenoid ON/OFF switch	Due to the "H"/"L" action of the pin 12 (SOL) of microprocessor IC12, Q50 turns ON/OFF to realize each operation mode of the mechanism.																														
Q51	2SC1740S (Q, R) 2SC945 (A) (Q, P)	Reel pulse detector	For supply reel pulse. Receiving the output "H"/"L" pulse of the photoreflector, Q51 turn ON/OFF.																														
Q52	2SC1740S (Q, R) 2SC945 (A) (Q, P)	Reel pulse detector	For takeup reel pulse. Receiving the output "H"/"L" pulse of the photoreflector, Q52 turns ON/OFF.																														
Q53~56	2SA933S (Q, R) 2SA733 (A) (Q, P)	Key matrix switches	Due to the ON/OFF operation of the HALF, REC INHIBIT, CHROME or METAL switch used with the mechanism, Q53~Q56 turns ON/OFF correspondingly. Microprocessor IC12 thus discriminates the cassette tape. Q53 for HALF, Q54 for REC INHIBIT, Q55 for CHROME, Q56 for METAL.																														
Q57	2SB941 (Q, P)	−30 V power supply	FL display circuit regulated power supply.																														
Q58	DTC124ES	HX slow start switch	For the switch logic to slowly turn up the bias oscillation waveform for recording, refer to the pertinent description under Q24.																														
IC1	M5220P	Playback EQ amplifier																															
IC2	CXA1330S	Playback DOLBY noise reduction																															
IC3	MB84066BM MPD4066BC	Monitor selection switch	Selection between tape monitor and source monitor																														
IC4	CXA1330S	Recording DOLBY noise reduction																															
IC5	M5218P NJM4558D	Recording amplifier																															
IC6	MPC1297CA	HX PRO IC																															
IC7	TD62554S	Normal/chrome tape bias setting	<table><tr><td></td><td>Normal</td><td>Chrome</td></tr><tr><td>Lch</td><td>INVERTER 2: ON</td><td>INVERTER 1: ON</td></tr><tr><td>Rch</td><td>INVERTER 4: ON</td><td>INVERTER 3: ON</td></tr></table>		Normal	Chrome	Lch	INVERTER 2: ON	INVERTER 1: ON	Rch	INVERTER 4: ON	INVERTER 3: ON																					
	Normal	Chrome																															
Lch	INVERTER 2: ON	INVERTER 1: ON																															
Rch	INVERTER 4: ON	INVERTER 3: ON																															
IC8	TD62554S	Bias step	Refer to the pertinent description under Q26~Q29.																														
IC9	M5218L	Headphone amplifier																															
IC10	M5218P NJM4558D	Meter amplifier	Refer to the pertinent description under Q40.																														
IC11	BA6138	Meter drive amplifier	1/2 power compressor amplifier																														


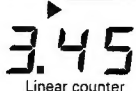










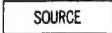


CIRCUIT DESCRIPTION

Component(s)	Name	Use/function	Operation/condition/compatibility
IC12	M50941-317SP	Microprocessor	Refer to a separate section.
IC13	CXD1067P	Extension IC	Refer to a separate section.
IC14	M51951ASL PST529D	Reset IC	
IC15	BA6229	Reel motor drive IC	The pin 6 of IC15 is made "L" to drive the reel motor in the forward direction, whereas the pin 5 of IC15 is made "L" to drive it in the reverse direction. Also refer to the pertinent description under Q47 and Q48.
IC16	AN7908F MPC7908HF	-8 V power supply	Signal system regulated power supply
IC17	AN7808F MPC7898HF	+8 V power supply	Signal system regulated power supply
IC18	MPC7812H MPC7812HF	+12 V power supply	Mechanism and microprocessor system regulated power supply
IC19	MPC7805H MPC7805HF	+5 V power supply	Microprocessor system regulated power supply
IC20	NJM78L05A MPC78L05J	+5 V power supply	Tape selector driver regulated power supply

Display unit (X25-3770-00)

Component(s)	Name	Use/function	Operation/condition/compatibility
Q1	2SC1740S (Q, R) 2SC945 (A) (Q, P)	Current buffer for 1GA	Compatible if V_{cbo} is more than 50 V and I_{cmax} is more than 100 mA.
Q2	2SC1740S (Q, R) 2SC945 (A) (Q, P)	Current buffer for 1GB	Compatible if V_{cbo} is more than 50 V and I_{cmax} more than 100 mA.
Q3	2SC1740S (Q, R) 2SC945 (A) (Q, P)	Current buffer for 2GB	Compatible if V_{cbo} is more than 50 V and I_{cmax} more than 100 mA.
Q4	2SC1740S (Q, R) 2SC945 (A) (Q, P)		At POWER ON, the port q of IC12 (X26-1240-00 A/21) becomes "H" from "L" and the output of Q4 becomes "L" from "H" to reset IC1.
IC1	MPD7564CS-113	Remote control reception microprocessor	

CIRCUIT DESCRIPTION

Key name	Description	Conditions of nonacceptance	Display
PLAY KEY  (◀◀)	1. When pressed singly, the play mode is engaged. ● Play stops at the tape end.	● During CCRS ● During AUTO BIAS operation ● Without cassette half	 Linear counter
	2. When pressed simultaneously with the REW key, the tape is rewind, then played. ● Concurrently with the pressure, the tape is rewind. ● Play starts at the tape head.		 Linear counter
STOP KEY  (▶▶) (◀◀)	1. When pressed, all operation stops. ● When pressed during CCRS, the CD player also stops.	● During CCRS ● During AUTO BIAS operation ● Without cassette half	Linear counter
	2. When pressed simultaneously with the FF key, the tape zero-stops in the FF direction. ● Concurrently with the pressure, the tape is fast forwarded and when the linear counter display reaches "0.00", stops.		 Linear counter
	3. When pressed simultaneously with the REW key, the tape zero-stops in the REW direction. ● Concurrently with the pressure, the tape is rewind and when the linear counter display reaches "0.00", stops.		 Linear counter
EJECT SW	1. When pressed, all operation stops and the cassette half is ejected. ● When pressed during CCRS, the CD player also stops.	● During play ● During recording	Linear counter The tape selector display goes out.
PAUSE KEY	1. When pressed during play, the play pause mode is engaged. When pressed during recording, the recording pause mode is engaged.	● During CCRS ● During AUTO BIAS operation ● Without cassette half	PLAY PAUSE  REC PAUSE 
	2. When pressed simultaneously with the REC key, the recording pause mode is engaged.	● During CCRS ● During AUTO BIAS operation ● Without cassette half ● Without recording tab	Linear counter
REC KEY	1. When pressed during stop or recording pause, the recording mode is entered.	● During CCRS ● During AUTO BIAS operation ● Without cassette half ● Without recording tab	REC 
	2. When pressed simultaneously with the PAUSE key, the recording pause mode is engaged.		REC PAUSE 
	3. When pressed during recording, ARM (auto recording mute) is performed. ● The recording mute mode is engaged. 4 sec after, the recording pause mode is entered.		 Linear counter
TAPE/SOURCE KEY	1. Selection is made between tape and source. ● At power ON, the tape is engaged. ● For play or recording, the tape is automatically engaged. ● For recording pause, the source is automatically engaged.	● During CCRS ● During AUTO BIAS operation	For tape  For source 
COUNTER RESET KEY	1. The linear counter is reset to "0.00". ● While pressed, "0.00" is held. ● When pressed during zero-stop, the stop mode is engaged.		
AUTO BIAS KEY	1. The AUTO BIAS operation is performed. ● The tape is fast forwarded (FF) for 1 second. ● After that, up from the deepest bias step, 400 Hz and 10 kHz are recorded alternately (300 msec each) and level-checked repeatedly (300 msec each) up to the fullest range. In this process, when 400 Hz level < 10 kHz level, the operation hereat stops and the tape is rewind to the start point. ● When pressed when the auto bias setting is already made, the setting is canceled. (However, the setting cannot be canceled during recording.) ● For between tape and source, the tape is automatically selected.	● During CCRS ● During AUTO BIAS operation ● Except during stop ● Without cassette half ● Without recording inhibit tab	During setting  Flickers
			Setting already made  Lights
CCRS KEY	1. The deck enters the CCRS operation together with the CD player. ● For operation, refer to a separate paper.	● During CCRS operation ● During AUTO BIAS operation ● Without cassette half ● Except during stop ● Without recording inhibit tab	

CIRCUIT DESCRIPTION

Key name	Description	Conditions of nonacceptance	Display
TIMER PLAY SW	1. With this switch set to ON, the play mode is automatically engaged 4 seconds later from power ON.	● Without cassette half	
TIMER REC SW	1. With this switch set to ON, the recording mode is automatically engaged 4 seconds later from power ON.	● Without cassette half ● Without recording inhibit tab	
Bilateral easy operation ON/OFF switch	1. The bilateral easy operation or synchronous recording ON/OFF selection is made. ● For operation, refer to a separate section.		

Test Mode

1. Setting of test mode

Shorting the test pin (TP3 ↔ TP4), turn the power ON.

2. Contents of test mode

- At power ON, the FL display is all lit.
- With a key ON or for timer play or timer recording, the FL display is canceled from all lighting.
- Each key is accepted after 1 second from power ON.
- The recording mode is accepted from any mode whatsoever.

- Any key is accepted irrespective of the half switch and the recording inhibit tab.

- The AUTO BIAS setting is performed in a shorter mode (1/3 the normal speed) in 16 steps at any case without LINE OUT muting.

3. Cancellation of test mode

The test mode is cancelled by pressing the PAUSE key.

CIRCUIT DESCRIPTION

About Bilateral Easy Operation ON/OFF Switch Function

The operation varies as follows depending upon the ON/OFF setting of the bilateral easy operation ON/OFF switch:

Switch status Combination	XR (ON)	XS (OFF)
1. System Component/ Receiver	Connected to terminal TAPE 1. ● Easy operation is performed. ● Synchronous mode (PHONO, CD) is performed. ● During recording, the selector of the amplifier and the TAPE 2 monitor key are locked.	Connected to terminal TAPE 2. ● Easy operation is not performed. ● Synchronous mode is not performed. ● During recording, the selector of the amplifier and the TAPE 2 monitor key are not locked.
2. KA-V7000 KA-V6000 KA-V4000	Synchronous mode (PHONO, CD) only is performed. (However, the input selector and the REC OUT selector should be the same in setting.)	● Easy operation is not performed. ● Synchronous mode is not performed.
3. Component unit and KA-V5000	● Easy operation is not performed. ● Synchronous mode is not performed.	● Easy operation is not performed. ● Synchronous mode is not performed.

* However, in any case, the synchronous mode is performed in recording after CCRS operation. (CD player only) In addition, an operation by the system remote control is accepted in any event. (Deck-B code)

EDIT CCRS Operation

Deck	CD player
1. Press the CCRS key. ● The recording pause mode is engaged automatically. (This operation is canceled unless a reply is given within 30 seconds from the CD player.) ● When the STOP or EJECT key is pressed, this operation is canceled. Any other key is not inhibited.	● Peak point sampling starts. ● In the time display, the CCRS portion lights. ● When the STOP or OPEN/CLOSE key is pressed, this operation is cancelled. Any other key is inhibited.
2. Seeing the level meter, adjust the REC level control.	
3. When the recording level is OKed, press the REC key. ● The recording mode is engaged. (The synchronous recording mode is engaged. When either side stops, the synchronous recording mode is canceled.) ● Any key is accepted. ● Upon the termination of recording the side A, the stop mode is engaged.	● Play is automatically made from the beginning of that tune. ● Any key is accepted. ● The time display returns to previous. ● Upon the termination of playing the file of the side A, the pause mode is engaged at the head of the file of the side B.
4. Side A → Side B	
5. Press the REC key.	
	6. Press the PLAY key.

CIRCUIT DESCRIPTION

Circuit Operation

DOLBY IC (CXA1330S)

Comparing the new DOLBY IC used in this unit with the conventional DOLBY IC...

1. Simplified I/O circuitry by virtue of fixed I/O gain
PB IN —30 dBs, REC OUT —6.0 dBs
REC IN —25 dBs, MONITOR OUT 0 dBs
(at DOLBY level, 0 dBs=0.755 V)
2. Smaller number of externally connected parts owing to great omission of capacitors within side chains
There only remain high-level and low-level DET rectification capacitors and spectrum skewing twin T filter.
3. Compatibility with two modes, passing and non-passing of line input through MPX filter
The DOLBY NR mode is controlled by voltage selection, basically as shown in Figure1.

The DOLBY input selection is as follows:

Through MPX filter ... MPX

Not through MPX filter ... REC

For playback input ... PB

This control is made by voltage selection, basically as shown in Figure 2.

This DOLBY IC is operable on either a single power or positive/negative dual power as shown below:

Power	IC	Pin16	Pin 15	Pin 17
Single power		Vcc	GND	Connected to GND through chemical capacitor
Positive/negative dual power		+Vcc	-Vcc	GND

Note: Pin 17, which is the input of the internal reference power, is subject to resistor-division between pins 16 and 15 into 1/2 Vcc (GND).

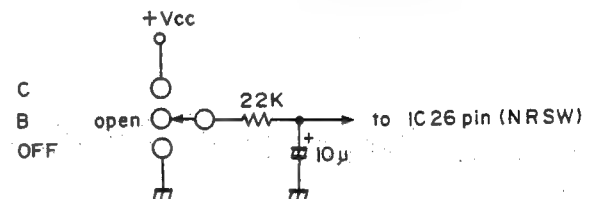


Figure 1. NR mode selection (on single power)

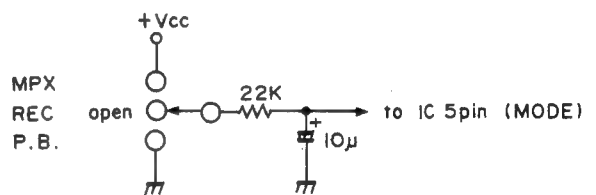
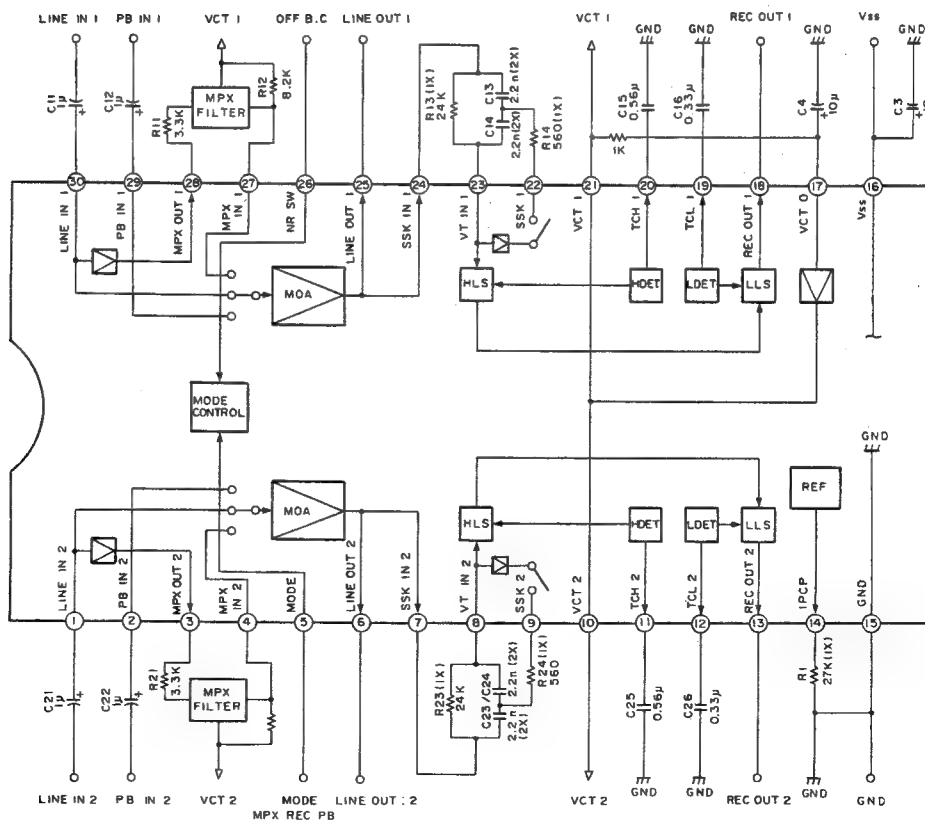


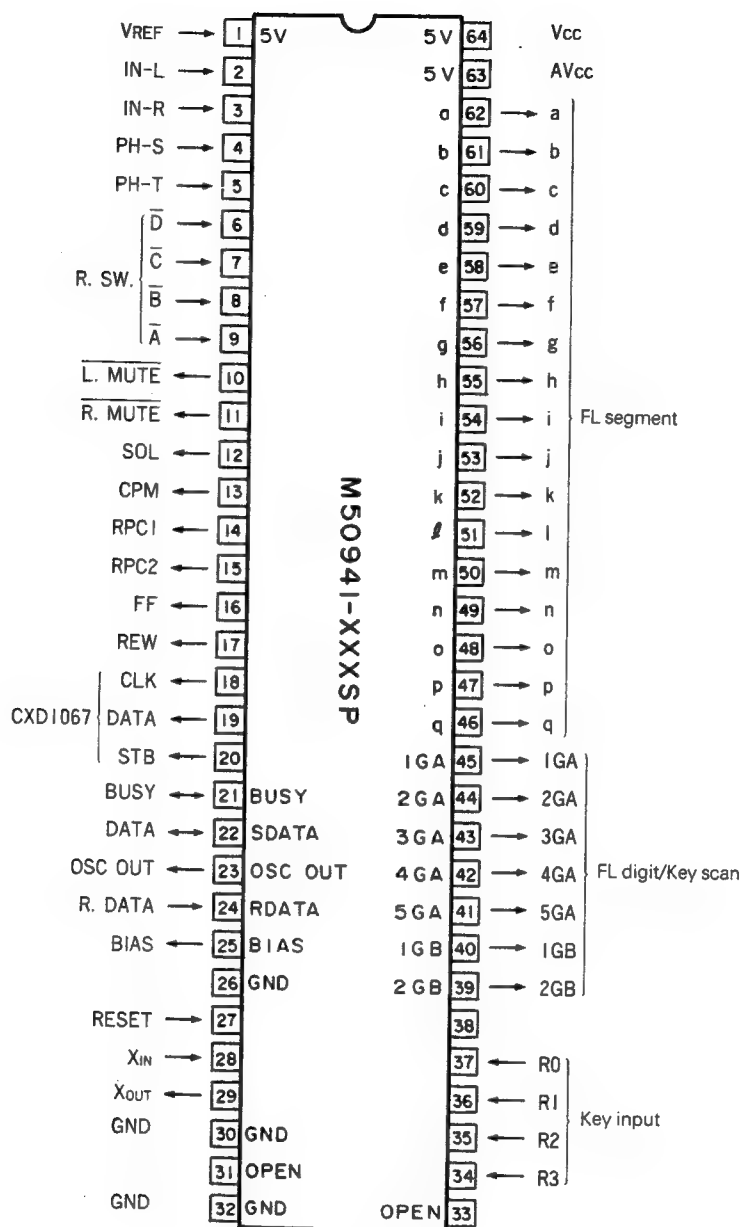
Figure 2. Mode selection (on single power)



CIRCUIT DESCRIPTION

Microprocessor (M50941-317SP)

Pin Connections:



	KEY 6	KEY 5	KEY 4	KEY 3	KEY 2	KEY 1
R0	CHROME	TIMER REC	HALF SW	AUTO BIAS	▷	TAPE/SOURCE
R1	METAL	TIMER	TEST 1		◻	▷▷
R2	DOLBY B	BILATERAL ON/OFF	REC SW		◁◁	◻◻
R3	DOLBY C		TEST 2	CCRS	○ REC	COUNTER RESET
	1GB	1GA	2GA	3GA	4GA	5GA

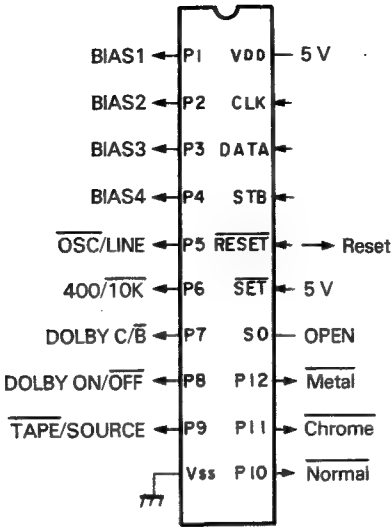
Key Matrix

CIRCUIT DESCRIPTION

Pin Functions of M50941-317SP:

Pin No.	Pin Name	I/O	Signal name	Description									
1	VREF	I		5 V									
2	IN7	I	INPUT-L	Music signal input (A/D) L-ch									
3	IN6	I	INPUT-R	Music signal input (A/D) R-ch									
4	IN5	I	PH-S	Linear counter pulse input, auto stop input (supply reel side)									
5	IN4	I	PH-T	Linear counter pulse input (takeup reel side)									
6~9	IN3~IN0	I	\overline{D} , \overline{C} , \overline{B} , \overline{A}	Mechanism rotary switch input pins									
10	P47	O	LINE-MUTE	LINE OUT mute pin, mute at "L"									
11	P46	O	REC-MUTE	Recording amplifier mute pin, mute at "L"									
12	P45	O	SOL	Mechanism solenoid output. Solenoid ON at "H"									
13	P44	O	CPM	Mechanism capstan motor output. Motor ON at "H"									
14	P43	O	RPC 1	Reel motor voltage selection pin. 3.5 V at "H" and otherwise "L"									
15	P42	O	PRC 2	Reel motor voltage selection pin. 6 V at "H" and otherwise "L"									
16	P41	O	FF	Reel motor direction selection pin									
17	P40	O	REW	Reel motor direction selection pin									
				<table><tr><td>FF</td><td>STOP</td><td>REWIND</td></tr><tr><td>1</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>1</td></tr></table>	FF	STOP	REWIND	1	0	1	0	1	1
FF	STOP	REWIND											
1	0	1											
0	1	1											
18	P37	O	CLK	Clock output pin for CXD1067									
19	P36	O	DATA	Data output pin for CXD1067									
20	P35	O	STB	Strobe output pin for CXD1067									
21	P34	I/O	BUSY	Inter-unit serial communication BUSY pin									
22	P33	I/O	SDATA	Inter-unit serial communication DATA pin									
23	P32	O	OSC OUT	Auto bias 400 Hz/10 kHz square wave output pin									
24	P31	I	RDATA	Input pin of serial data from remote control microprocessor									
25	P30	O	BIAS	BIAS signal control. BIAS ON at "H"									
26	CNVss			GND									
27	RESET	I		Reset input pin									
28	XIN	I		Clock input pin									
29	XOUT			Clock output pin									
30	XCIN	I		GND									
31	XCOUT	O		OPEN									
32	Vss			Power supply pin (GND)									
33	ϕ	O		OPEN									
34~37	R3~R0	I		Key scan input pins ("H" with key ON)									
38	Vp	I		Port P0, P1 or P2 pull-down voltage input pin									
39~45	P17~P11	O	2GB~1GA	FL digit or key scan output pins									
46~62	P10, P0, P2	O	q-a	FL segment output pins									
63	AVcc			5 V									
64	Vcc			Power supply pin (5 V)									

CIRCUIT DESCRIPTION



Pin Functions of CXD-1067P:

Pin No.	Pin name	I/O	Signal name	Description
1	P1	O	BIAS 1	AUTO BIAS bias level varying input
2	P2	O	BIAS 2	
3	P3	O	BIAS 3	
4	P4	O	BIAS 4	
5	P5	O	OSC/LINE	Recording source select pin. Oscillator at "L"
6	P6	O	400/10K	AUTO BIAS oscillator filter select pin. 10 kHz at "L"
7	P7	O	DOLBY C/B	DOLBY mode select pin. DOLBY C at "H"
8	P8	O	DOLBY ON/OFF	DOLBY ON/OFF pin. DOLBY ON at "H"
9	P9	O	TAPE/SOURCE	Tape/source select pin. Source at "H"
10	VSS	O		Power supply pin (GND)
11	P10	O	NORMAL	Tape select circuit control pin. Normal tape at "L"
12	P11	O	CHROME	Tape select circuit control pin. Chrome tape at "L"
13	P12	O	METAL	Tape select circuit control pin. Metal tape at "L"
14	SO	O		OPEN
15	SET	I		5 V
16	RESET	I		Reset input pin
17	STB	I		Data strobe input pin
18	DATA	I		Data input pin
19	CLK	I		Data clock input pin
20	VDD			Power supply pin (5 V)

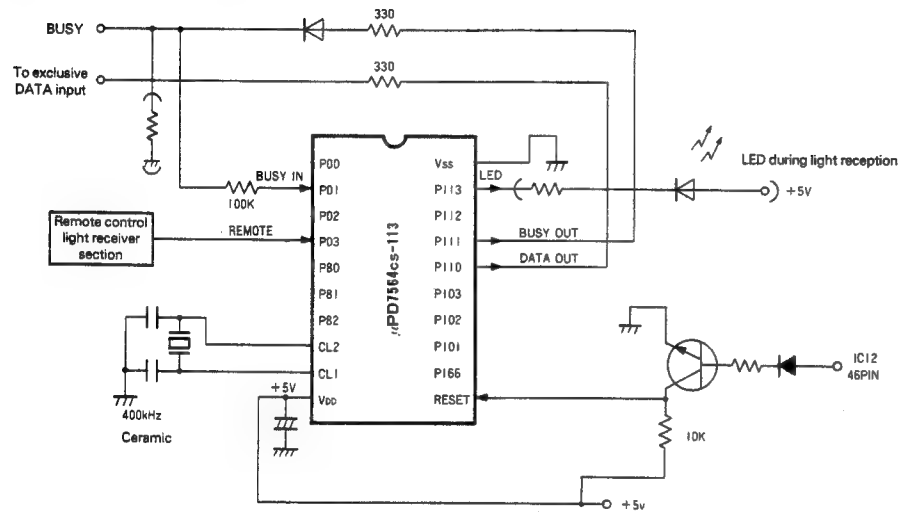
CIRCUIT DESCRIPTION

Microprocessor (μ PD7564CS-113)

1. Remote control reception

- (a) This receives the remote control custom code "B749" for a single cassette deck, converts that data code to a serial code (with the same format as for system control), which is in turn output. (However, the system control is given priority. For this reason, when the bus is busy, no remote control signal is received.)

- (b) LED flickering during remote control code reception
The LED flickers at cycles of 64 msec during remote control code reception.
- (c) Remote control key OFF detection
Upon termination of remote control code reception, the code "27" is output as the key OFF signal.

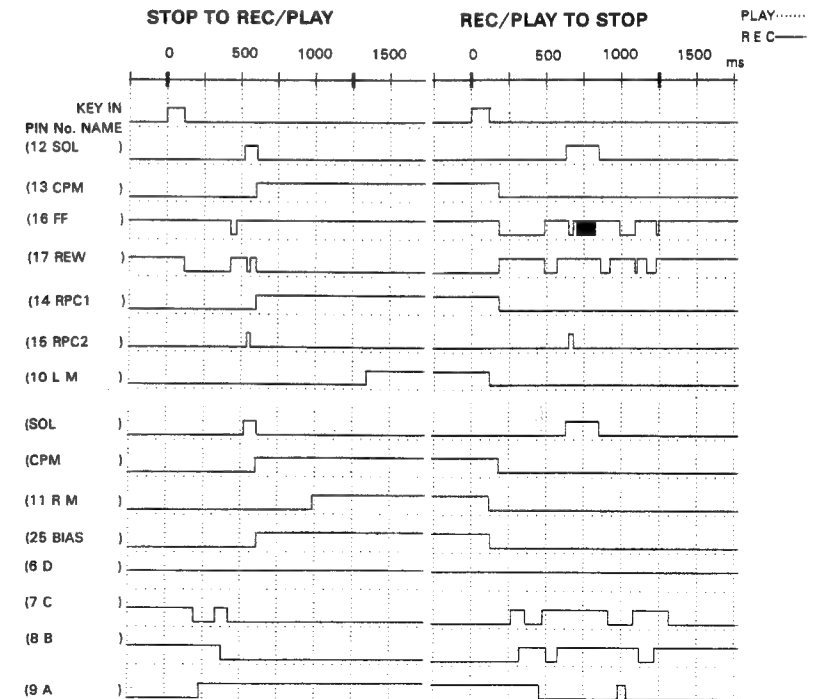
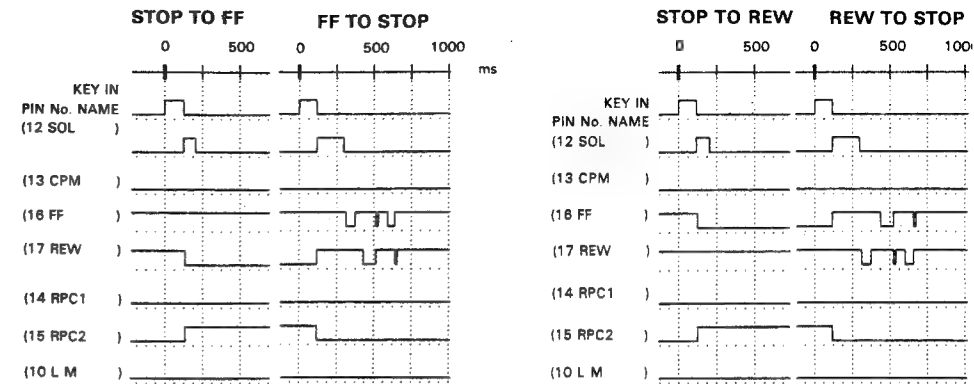


Pin Functions

Pin No.	Pin name	I/O	Description	Pin No.	Pin name	I/O	Description
1	P00	I	Unused	11	RESET	I	Reset input pin ("H" reset)
2	P01	I	Busy input pin	12	P100	O	Unused (N-ch output)
3	P02	I	Unused	13	P101	O	Unused (N-ch output)
4	P03	I	Remote control signal input pin (Active "L")	14	P102	O	Unused (N-ch output)
5	P30	O	Unused (N-ch output)	15	P103	O	Unused (N-ch output)
6	P31	O	Unused (N-ch output)	16	P110	O	DATA output pin (CMOS output)
7	P32	O	Unused (N-ch output)	17	P111	O	BUSY output pin (CMOS output)
8	CL2		Clock oscillation pin (400 kHz)	18	P112	O	Unused (N-ch output)
9	CL1		Clock oscillation pin	19	P113	O	LED drive pin (N-ch output)
10	VDD		Power supply pin (+5 V)	20	VSS		GND

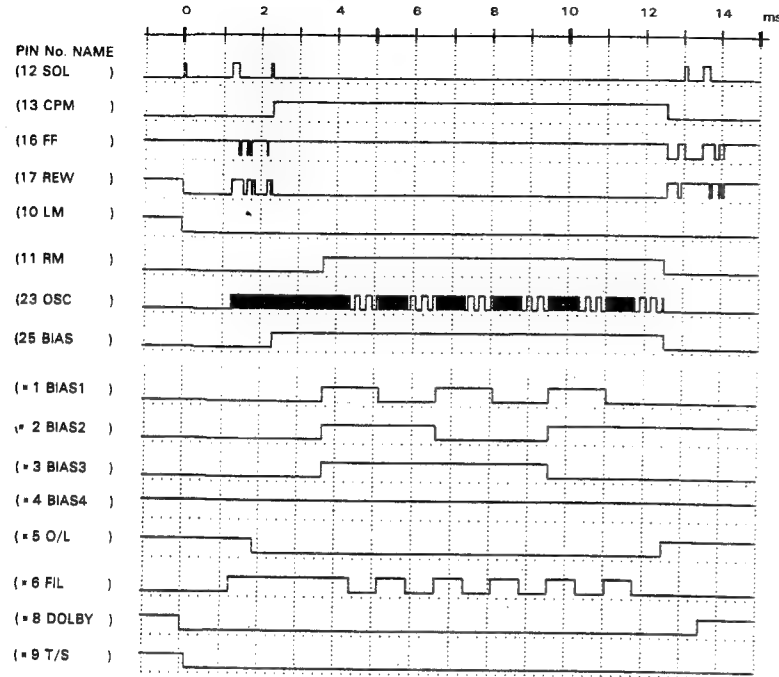
CIRCUIT DESCRIPTION

Timing chart



CIRCUIT DESCRIPTION

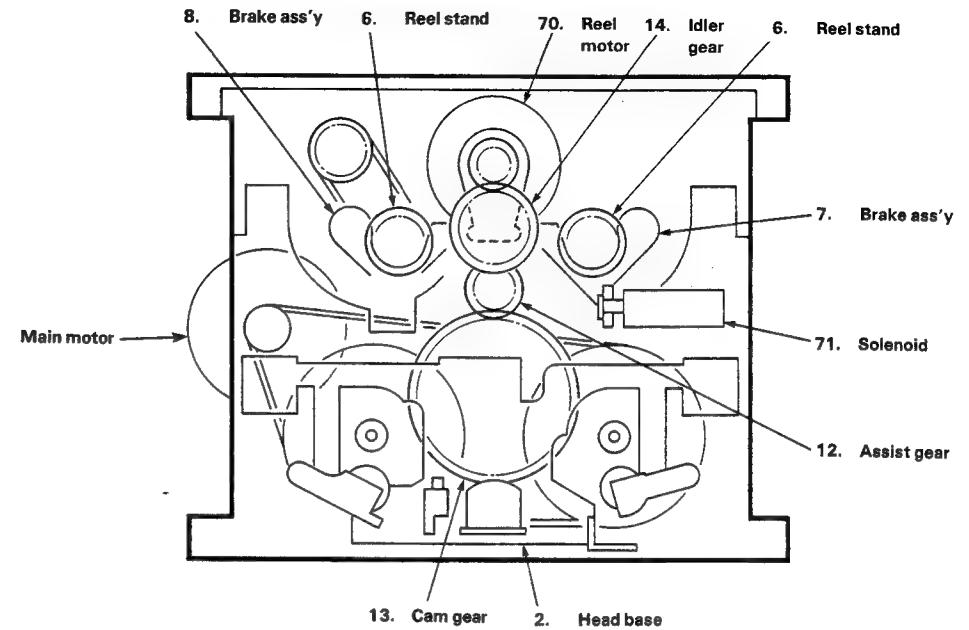
AUTO BIAS



SME CAM FLOW

Direction	RVS								FWD							
MODE	PLAY	PAUSE	PAUSE	PAUSE	STOP	STOP	STOP	STOP	PAUSE	PAUSE	PAUSE	PAUSE	PLAY	PLAY	PLAY	PLAY
CAM ANGLE	20°	24°	18°	46°	14.5°	11°	46.5°	46.3°	11°	14.5°	46°	18°	24°	20°		
ROTARY SW	A															
	B															
	C															
	D															
HEAD BASE POSITION	PLAY															
	PAUSE															
	STOP															

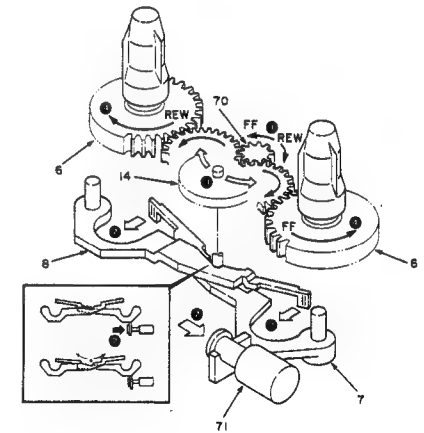
MECHANISM DESCRIPTION



STOP → FF or REW

(Press the FF or REW key.)

- (1) The reel motor (70) starts to rotate in the direction of arrow ①.
- (2) At the same time, the solenoid (71) works to operate the brake ass'y (7, 8) in the direction of arrow ②.
- (3) As the idler gear (14) becomes free for a small time, the takeup reel (FF) and the supply reel (REW) are put into engagement.
- (4) Either reel stand (6) starts to rotate to provide the FF or REW operation ④.

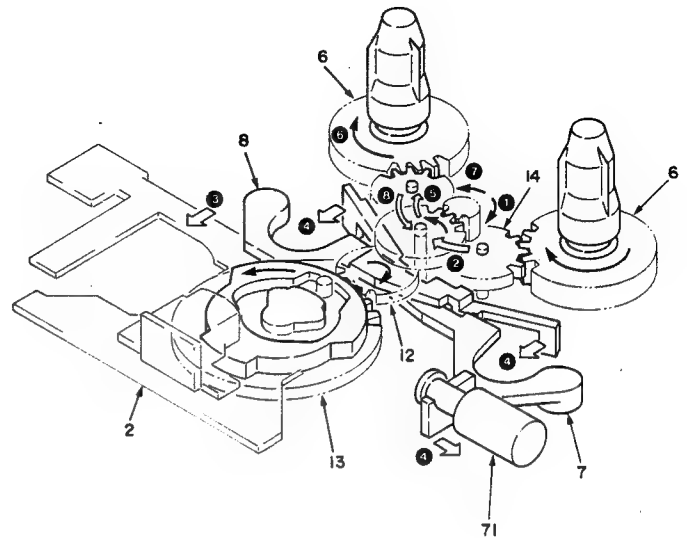


MECHANISM DESCRIPTION

STOP → PLAY/REC

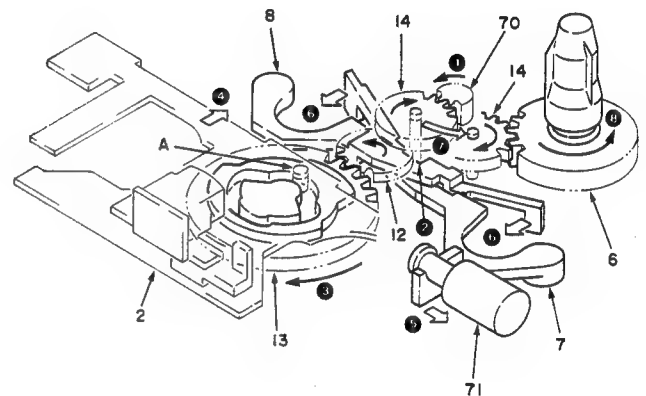
(Press the PLAY/REC button.)

- (1) The reel motor (70) starts to rotate in the direction of arrow ①.
- (2) Due to the brake assy (7, 8), the idler gear (14) continues to rotate at the central position.
- (3) The rotation of the reel motor (70) is transmitted to the cam gear (13) through the idler gear (14) and assist gear (12).
- (4) By the cam of the cam gear (13), the boss (A) on the head base is pushed up.
- (5) At this time, as the solenoid (71) works for a small time ... ⑤, the brake assy (7, 8) moves in the direction of arrow ⑥ and the idler gear (14) thus engages with the takeup reel (6) ... ⑦, so that the tape is wound to enter the PLAY/REC operation ... ⑧.

**PLAY/REC → STOP**

(Press the STOP key.)

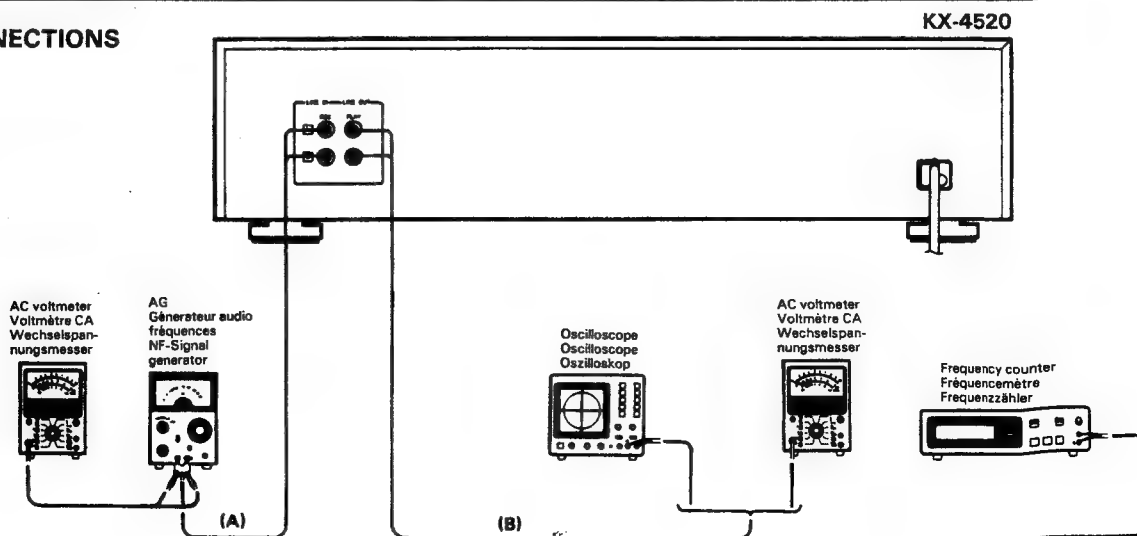
- (1) The reel motor (70) starts to rotate in the direction of arrow ①, and the idler gear (14) is thereby rotated and moved in the direction of arrow ② to the central position.
- (2) The cam gear (13) starts to rotate to lower the head base (2).
- (3) At this time, as the solenoid (71) works ... ④, the idler gear (14) is disengaged from the brake assy (7, 8) and is moved in the direction of arrow ⑤ so that the supply reel (6) is slightly rotated ⑥ to rewind the tape.
- (4) Again the reel motor (70) rotates reversely ⑦ to return the idler gear (14) to the central position, after which it stops.



ADJUSTMENT

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	CASSETTE TAPE DECK SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
Unless otherwise specified; each switch should be set as follows: TAPE: NORMAL, DOLBY,: OFF, INPUT: LINE I. Cassette mechanism section (REC/PB head adjustment)							0 dBs — 0.775 V
[1]	Demagnetization and cleaning	—	—	Power OFF, demagnetization, cleaning play	REC/PB head, erase head, capstan, pinch roller	Demagnetize the REC/PB head by head eraser. Clean the REC/PB head, erase head, capstan and pinch roller with a cotton swab immersed in alcohol.	
[2]	REC/PB head azimuth	SCC-1727, MTT-114, TCC-153 10 kHz, -10 dB	(B)	PLAY	Azimuth adjustment screw	In a setting where the output is maximized, adjust the azimuth adjustment screw so that the Lissajous figure appearing on the oscilloscope screen comes near to a line slanted 45°. Note: The head should be installed in such a manner that it approaches the tape face.	(a)
[3]	Tape speed	MTT-111, SCC-1727 TCC-100 3 kHz, -4 dB	(B)	PLAY	Semi-fixed resistor in DC motor assembly	Adjust so that frequency is 3 kHz at the center of the tape.	(b)
II. PC board adjustment							
<1>	Playback level	MTT-150, TCC-130 400 Hz	(B)	PLAY	VR1(L) VR2(R) (X26-124)	Adjust so that LINE OUT is -1.0 dBs.	
		MTT-256, SCC-1727 315 Hz				Adjust so that LINE OUT is -4.0 dBs.	
		MTT-256U, TCC-160 315 Hz				Adjust so that LINE OUT is 0 dBs.	
<2>	Bias current	(A) 1 kHz, -30 dBs 10 kHz, -30 dBs	(B)	Adjust the REC VR (LEVEL, BALANCE) so that the REC monitor output is -24 dBs at 1 kHz, and record and playback 1 kHz and 10 kHz alternately.	VR7(L) VR8(R) (X26-124)	Record 1 kHz and 10 kHz alternately, and adjust each bias current adjustment VR so that the 10 kHz play back level is +0.5 dBs against 1 kHz.	
<3>	Recording level	(A) 1 kHz, -30 dBs	(B)	With the situation in above item <2> being kept as it is, record and play back 1 kHz.	VR5(L) VR6(R) (X26-124)	Adjust so that the playback output level is -24 dBs.	
<4>	FL meter 0 dB	(A) 1 kHz, -10 dBs	—	Adjust the REC VR (LEVEL, BALANCE) so that the REC PAUSE monitor output is -4 dBs at 1 kHz.	VR9(L) VR10(R) (X26-124)	Adjust so that "0 dB" lights.	
Note: On item <1> in "II. PC board adjustment"							
Although 3 kinds of tapes are set forth for the playback level adjustment, the use of one tape suffices for adjustment. Here is meant no necessity for the use of all these 3 kinds of tapes. Other than the above mentioned tapes, when a test tape equal in magnetic flux and frequency is available, the adjustment is feasible with this test tape by making the playback output suited to the specified output level of this tape in agreement with the adjustment method.							

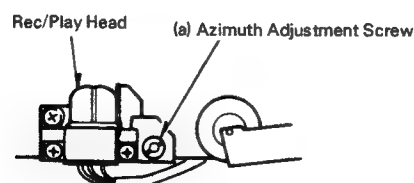
SYSTEM CONNECTIONS



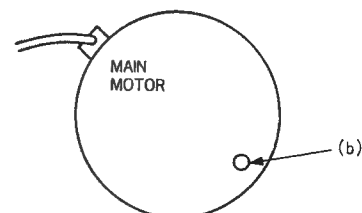
REGLAGE

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU MAGNETOPHONE A CASSETTE	POINTS DE L'ALIGNEMENT	ALIGNER POUR	FIG.
Chaque commutateur doit être réglé comme suit, à moins d'indication contraire. TAPE: NORMAL, DOLBY: OFF, INPUT: LINE I. Section de mécanisme de la cassette (ajustement de la tête d'enregistrement/lecture):							0 dBs — 0,775 V
[1]	Démagnétisation et nettoyage	—	—	Alimentation coupée, démagnétisation, nettoyage, lecture	Tête d'enregistrement/lecture, tête d'effacement, cabestan, galet presseur	Démagnétiser la tête d'enregistrement/lecture avec l'effaceur de tête. Nettoyer la tête d'enregistrement/lecture, la tête d'effacement, le cabestan et le galet presseur avec un coton-tige trempé dans de l'alcool.	
[2]	Azimut de la tête d'enregistrement/lecture	SCC-1727, MTT-114, TCC-153 10 kHz, -10 dB	(B)	PLAY	Vis d'ajustement de l'azimut	Au réglage où la sortie est maximisée, ajuster la vis de réglage de l'azimut pour que la figure de Lissajous sur l'écran de l'oscilloscope soit proche d'une ligne inclinée sur 45°. Remarque: La tête doit être installée de manière à ce qu'elle s'approche de la face de la bande.	(a)
[3]	Vitesse de la bande	SCC-1727, MTT-111, TCC-100 3 kHz, -4 dB	(B)	PLAY	Résistance semi-fixe dans l'ensemble du moteur CC.	Ajuster pour que la fréquence soit, 3 kHz au centre de la bande.	(b)
II. Ajustement de la plaquette de circuits imprimés							
<1>	Niveau de lecture	MTT-150, TCC-130 400 Hz	(B)	PLAY	VR1(L) VR2 (R) (X26-124)	Ajuster pour que LINE OUT soit -1,0 dBs.	
		MTT-256, SCC-1727 315 Hz				Ajuster pour que LINE OUT soit -4,0 dBs.	
		MTT-256U, TCC-160 315 Hz				Ajuster pour que LINE OUT soit 0 dBs.	
<2>	Courant de polarisation	(A) 1 kHz, -30 dBs 10 kHz, -30 dBs	(B)	Ajuster la VR REC (LEVEL, BALANCE) pour que la sortie de contrôle REC soit -24 dBs à 1 kHz et l'enregistrement et la lecture 1 kHz et 10 kHz alternativement.	VR7(L) VR8(R) (X26-124)	Enregistrer 1 kHz et 10 kHz alternativement et ajuster chaque VR d'ajustement de courant de polarisation pour que le niveau de lecture 10 kHz soit +0,5 dBs contre 1.	
<3>	Niveau d'enregistrement	(A) 1 kHz, -30 dBs	(B)	La situation en <2> maintenue, enregistrer et lire 1 kHz.	VR5(L) VR6(R) (X26-124)	Ajuster pour que le niveau de sortie de lecture soit -24 dBs.	
<4>	Compteur fluorescent 0 dB	(A) 1 kHz, -10 dBs	—	Ajuster la VR REC (LEVEL, BALANCE) pour que la sortie de contrôle REC PAUSE soit -4 dBs à 1 kHz.	VR9(L) VR10(R) (X26-124)	Ajuster pour que "0 dB" s'allume.	
Remarque: Sur le paragraphe <1> de II. Ajustement de la plaque de circuits imprimés.							
Bien que 3 sortes de bandes soient employées pour l'ajustement du niveau de lecture, l'utilisation d'une bande suffit pour l'ajustement. En plus des bandes citées ci-dessus, quand une bande test de flux magnétique et de fréquence égaux est disponible, l'ajustement est possible en réglant la sortie de lecture sur le niveau de sortie spécifique à cette bande, selon la méthode d'ajustement.							

(a) Azimuth Adjustment

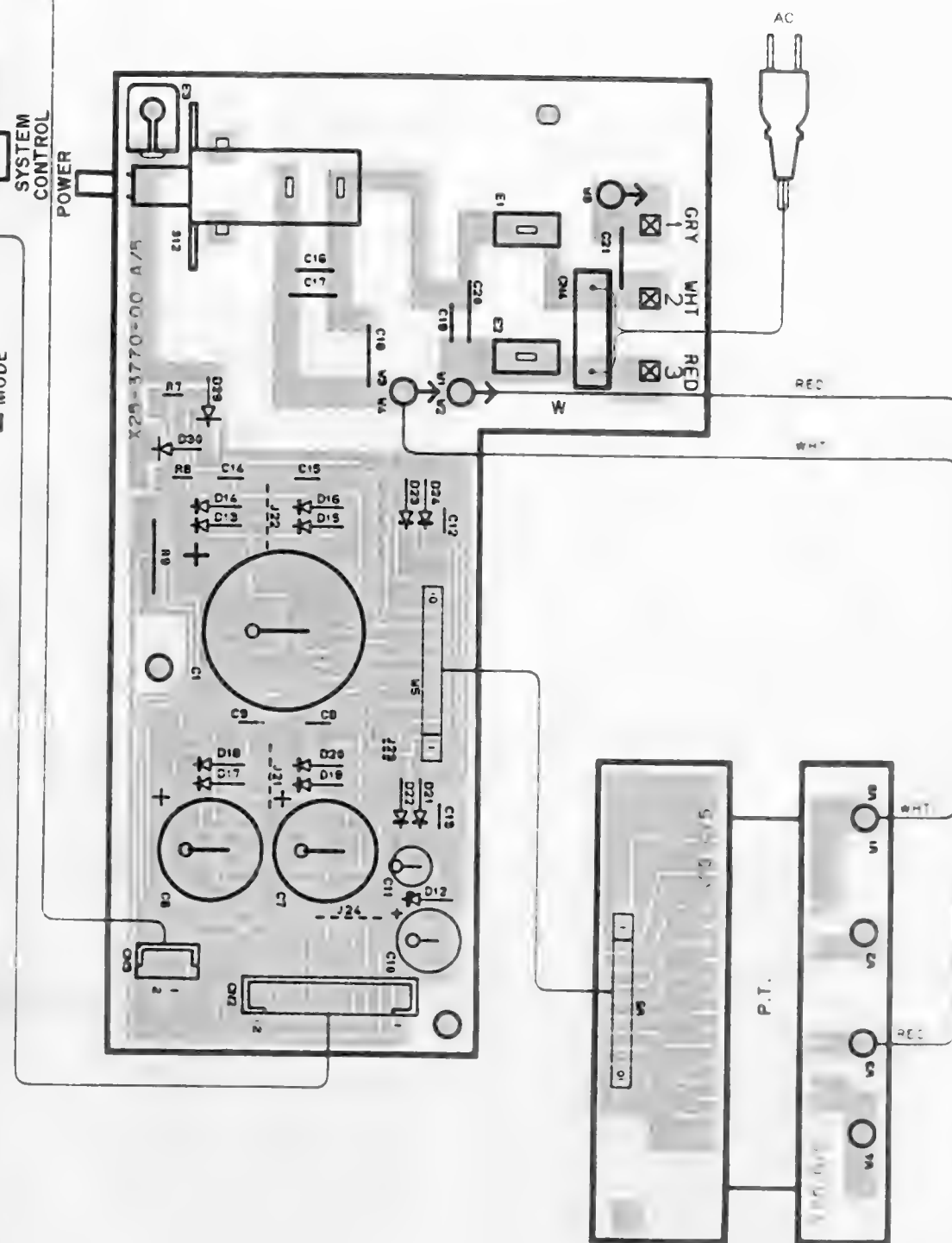
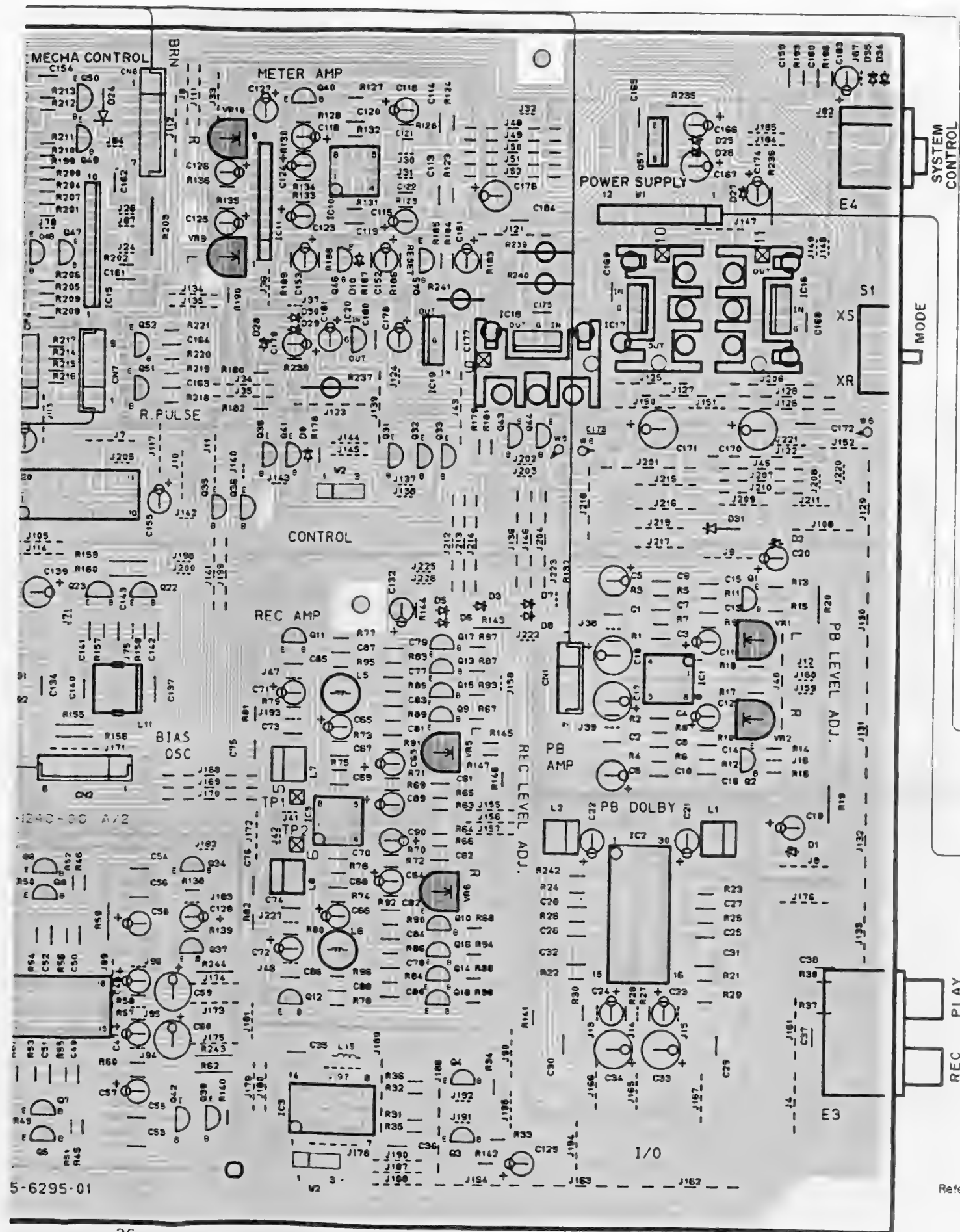


(b) Tape Speed Adjustment



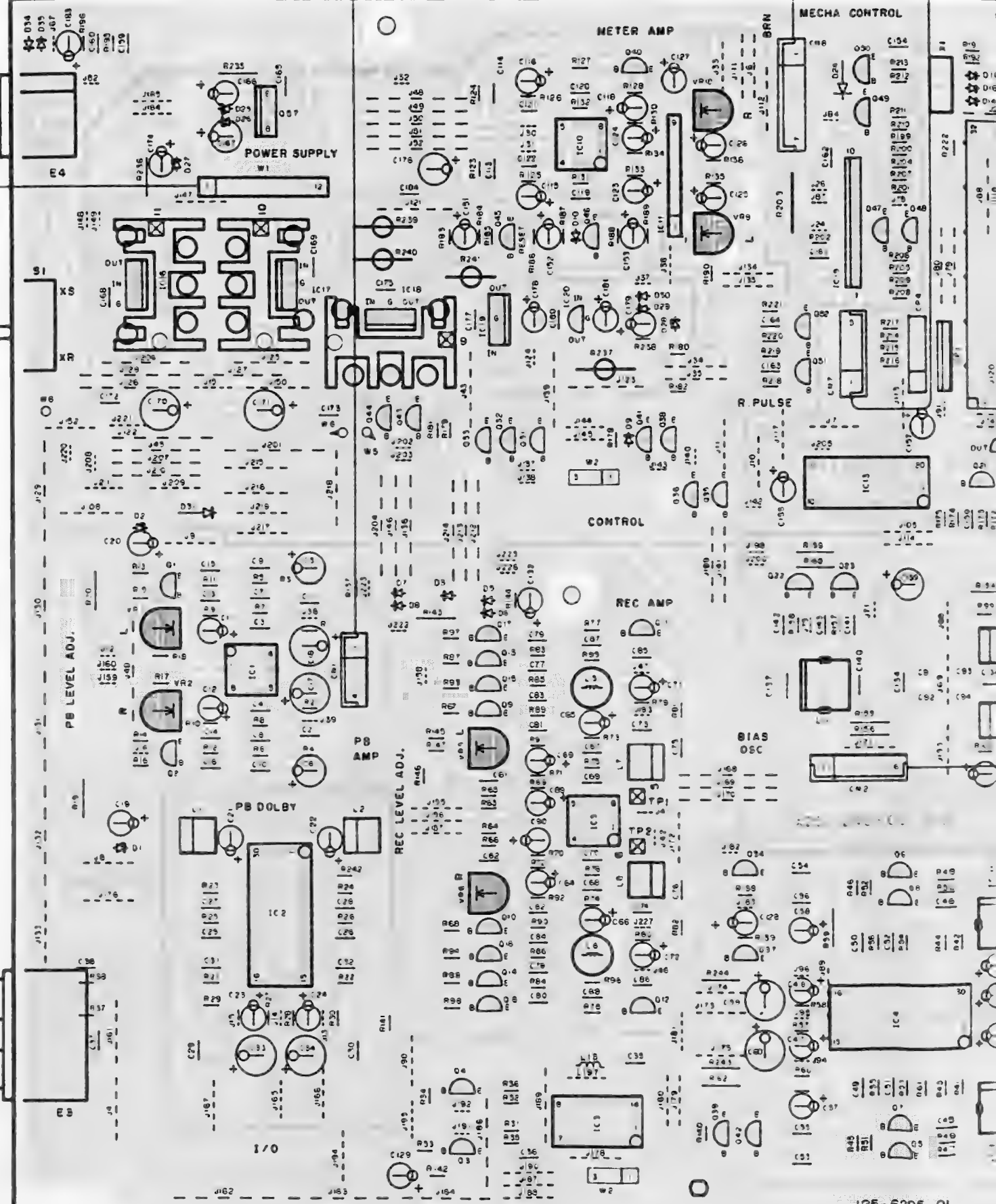
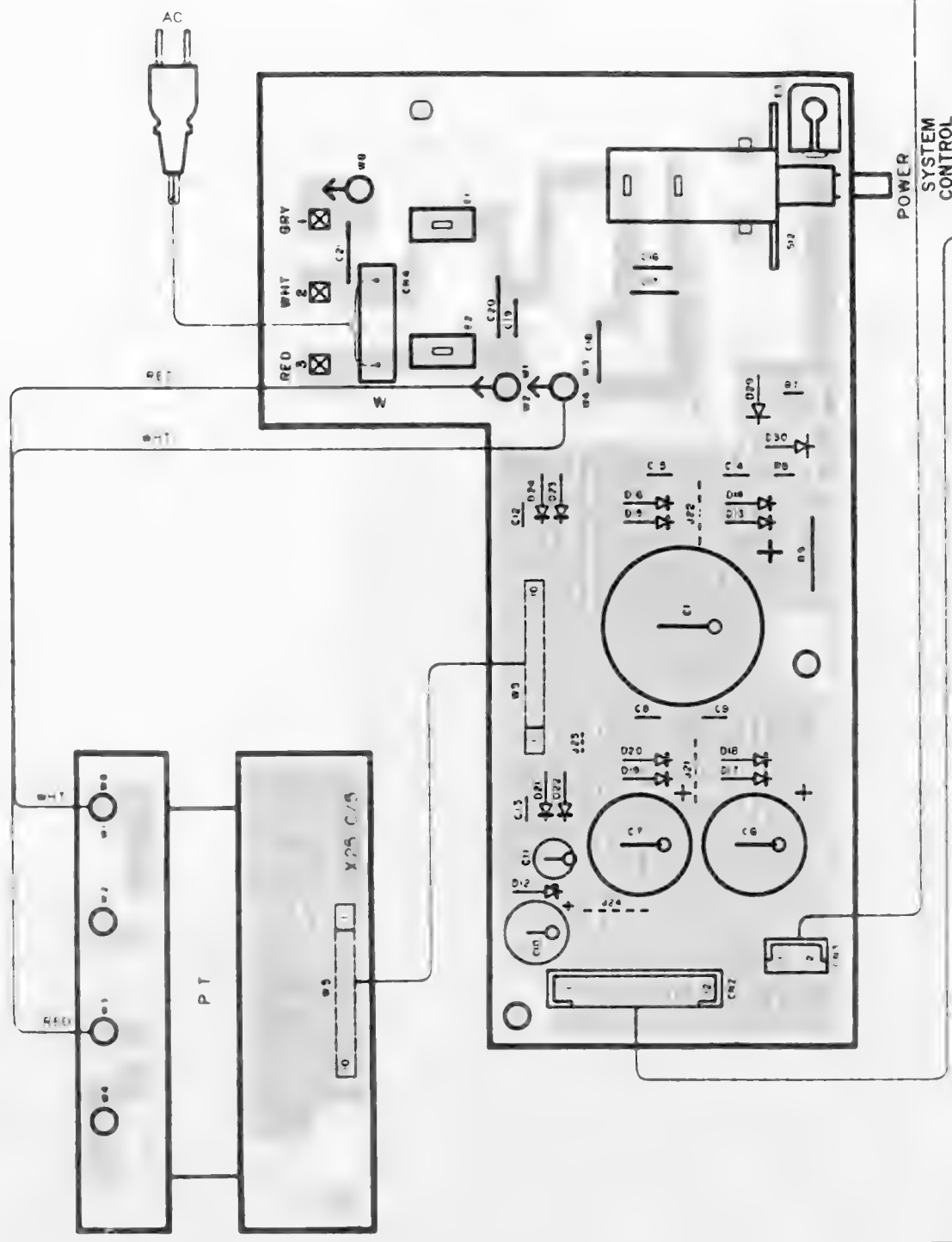
ABGLEICH

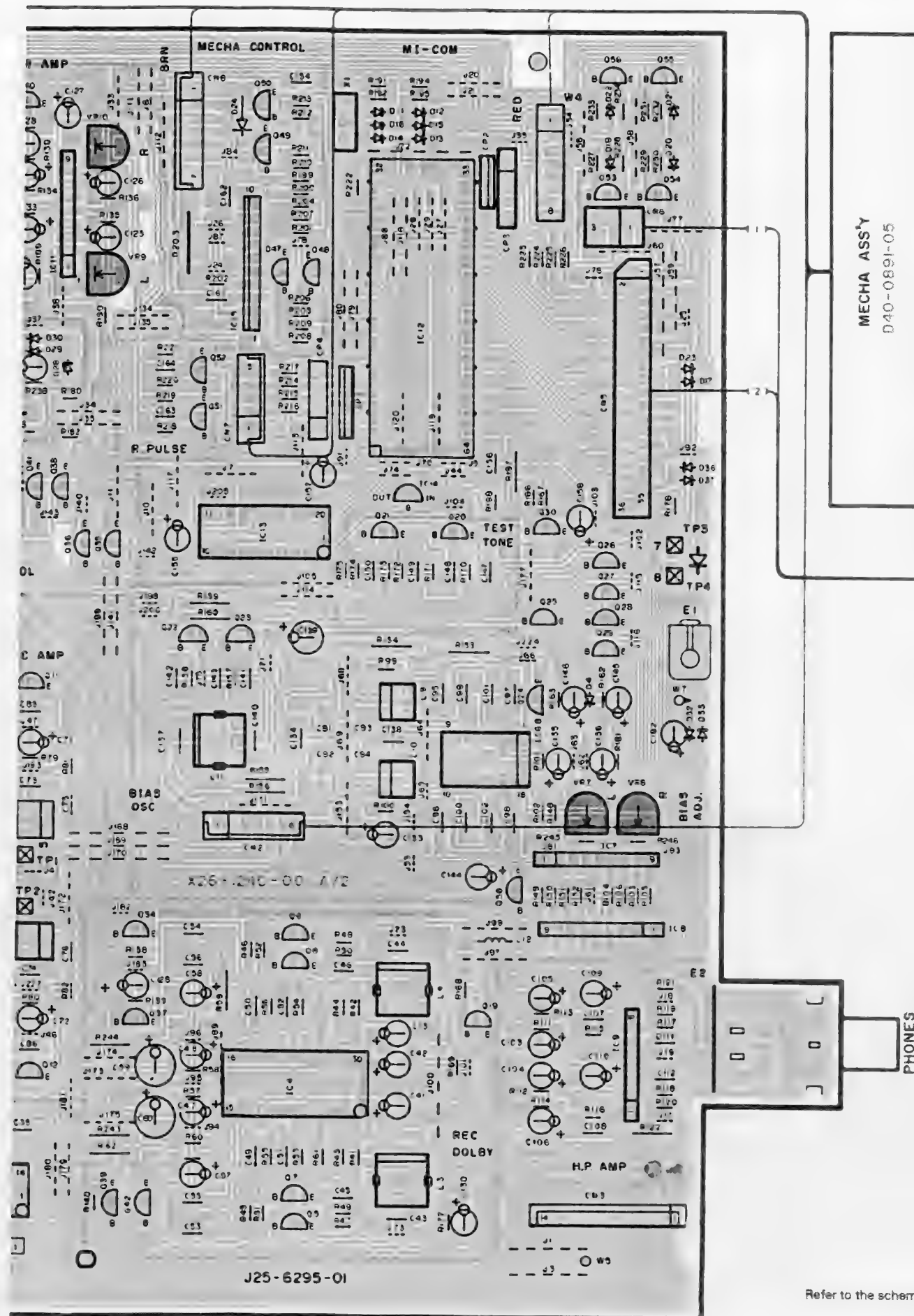
NR	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	KASSETTENGÄRÄT-EINSTELLUNG	ABGLEICH PUNKTE	ABGLEICHEN FÜR	ABB.
Falls nicht anders angegeben, müssen die einzelnen Schalter wie folgt eingestellt sein: TAPE: NORMAL, DOLBY: OFF, INPUT: LINE I. Kassettengerät-Abschnitt (Aufnahme/Wiedergabekopf-Einstellung)							0 dBs = 0,775 V
[1]	Entmagnetisierung und Reinigung	—	—	Spannungsversorgung aus, Entmagnetisierung, Reinigung, Wiedergabe	Aufnahme/Wiedergabekopf, Löschkopf, Tonwelle, Andruckrolle	Den Aufnahme/Wiedergabekopf mit einem Tonkopf- die Tonwelle und Entmagnetisierer entmagnetisieren. Den Aufnahme/Wiedergabekopf, den Löschkopf, die Andruckrolle mit einem in Alkohol eingetauchten Wattestäbchen reinigen.	
[2]	Aufnahme/Wiedergabekopf-Azimut	SCC-1727, MTT-114, TCC-153 10 kHz, -10 dB	(B)	PLAY	Azimut-Einstellschraube	Bei der Einstellung, bei der der Ausgang maximal ist, so einstellen, daß die auf die Azimut-Einstellschraube dem Oszilloskop-Bildschirm erscheinende Lissajousfigur nahe einer um 45° geneigten Linie kommt. Hinweis: Der Tonkopf muß so installiert sein, daß er zum Band weist.	(a)
[3]	Bandgeschwindigkeit	SCC-1727, MTT-111, TCC-100 3 kHz, -4 dB	(B)	PLAY	semi-fester Widerstand in der Gleichstrommotor-Einheit	So einstellen, daß die Frequenz in der Mitte des Bandes 3 kHz beträgt.	(b)
II. Platinen-Einstellung							
<1>	Wiedergabepegel	MTT-150, TCC-130 400 Hz	(B)	PLAY	VR1(L) VR2(R) (X26-124)	So einstellen, daß LINE OUT -1,0 dBs beträgt.	
		MTT-256, SCC-1727 315 Hz				So einstellen, daß LINE OUT -4,0 dBs beträgt.	
		MTT-256U, TCC-160 315 Hz				So einstellen, daß LINE OUT 0 dBs beträgt.	
<2>	Vormagnetisierungsstrom	(A) 1 kHz, -30 dBs 10 kHz, -30 dBs	(B)	Den REC-Regelwiderstand (LEVEL, BALANCE) so einstellen, daß der REC-Überwachungsausgang -24 dBs bei 1 kHz beträgt, und 1 kHz und 10 kHz abwechselnd aufnehmen und wiedergeben.	VR7(L) VR8(R) (X26-124)	1 kHz und 10 kHz abwechselnd aufnehmen und jeden Vormagnetisierungsstrom-Einstellungs-Regelwiderstand so einstellen, daß der 10-kHz-Wiedergabepegel +0,5 dB gegen 1 kHz beträgt.	
<3>	Aufnahmepegel	(A) 1 kHz, -30 dBs	(B)	Unter Beibehaltung der Situation im obigen Punkt <2> 1 kHz aufnehmen und wiedergeben.	VR5(L) VR6(R) (X26-124)	So einstellen, daß der Wiedergabe-Ausgangspegel -24 dBs beträgt.	
<4>	FL-Meter 0 dB	(A) 1 kHz, -10 dBs	—	Den REC-Regelwiderstand (LEVEL, BALANCE) so einstellen, daß der REC PAUSE-Überwachungsausgang -4 dBs bei 1 kHz beträgt.	VR9(L) VR10(R) (X26-124)	So einstellen, daß "0 dB" leuchtet.	
Hinweis: Zu Punkt <1> in "II. Platinen-Einstellung"							
Obwohl 3 Arten von Bändern für die Wiedergabepegel-Einstellung vorgegeben sind, reicht die Verwendung eines Bandes für die Einstellung aus. Das bedeutet, daß nicht alle 3 Arten Bänder verwendet werden brauchen. Wenn ein anderes Testband als die oben angeführten Bänder mit gleichen magnetischen Fluß und gleicher Frequenz verfügbar ist, kann die Einstellung mit diesem Testband durchgeführt werden, indem der Wiedergabe-Ausgang für den spezifizierten Ausgangspegel dieses Bandes in Übereinstimmung mit der Einstellmethode passend gemacht wird.							



Refer to the schematic diagram for the values of resistors and capacitors.

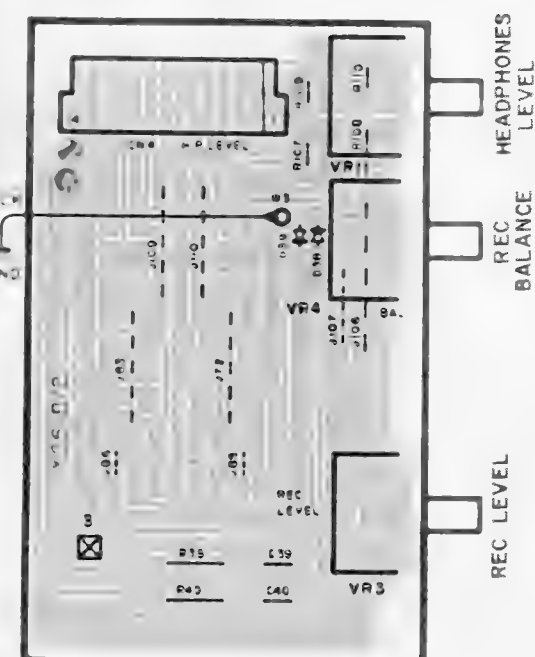
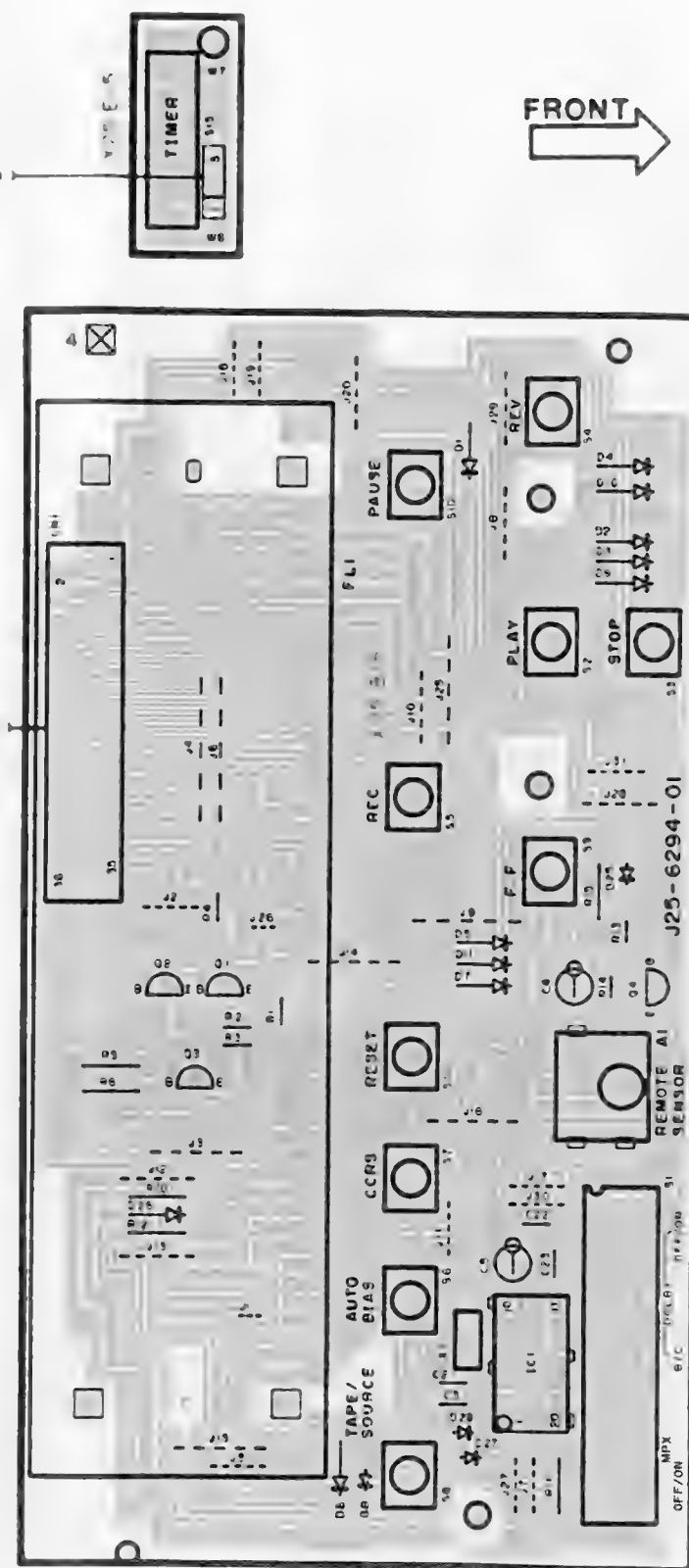
PC BOARD (Foil Side View)





Refer to the schematic diagram for the values of resistors and capacitors.

MECHA ASSY
D40-0891-05

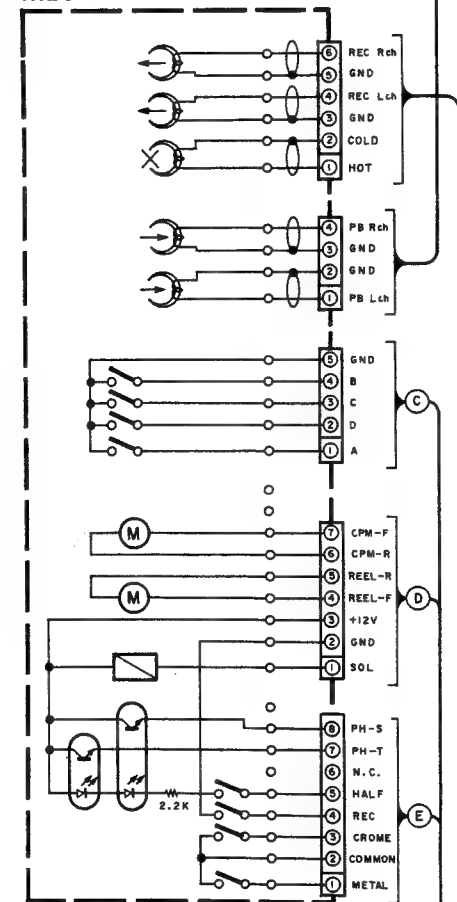


IC1,4 M5220P
IC2,4 CXA1305
IC3,10 MDA406BC or MB8406BHM
IC5,10 NJM4558D or M521BP
IC6 MPC1267CA
IC7,8 T0625045
IC9 M5218L
IC11 BA6138
IC12 M50941-XXXSP
IC13 CXD1087P
IC14 M51451ASL or PST524D
IC15 BA6224
IC16 PC7908HF or AN7908F
IC17 PC7808HF or AN7808F
IC18 PC7812HF or PC7812H
IC19 PC7805HF or PC7805H
IC20 PC78L05J or NJM78L05A

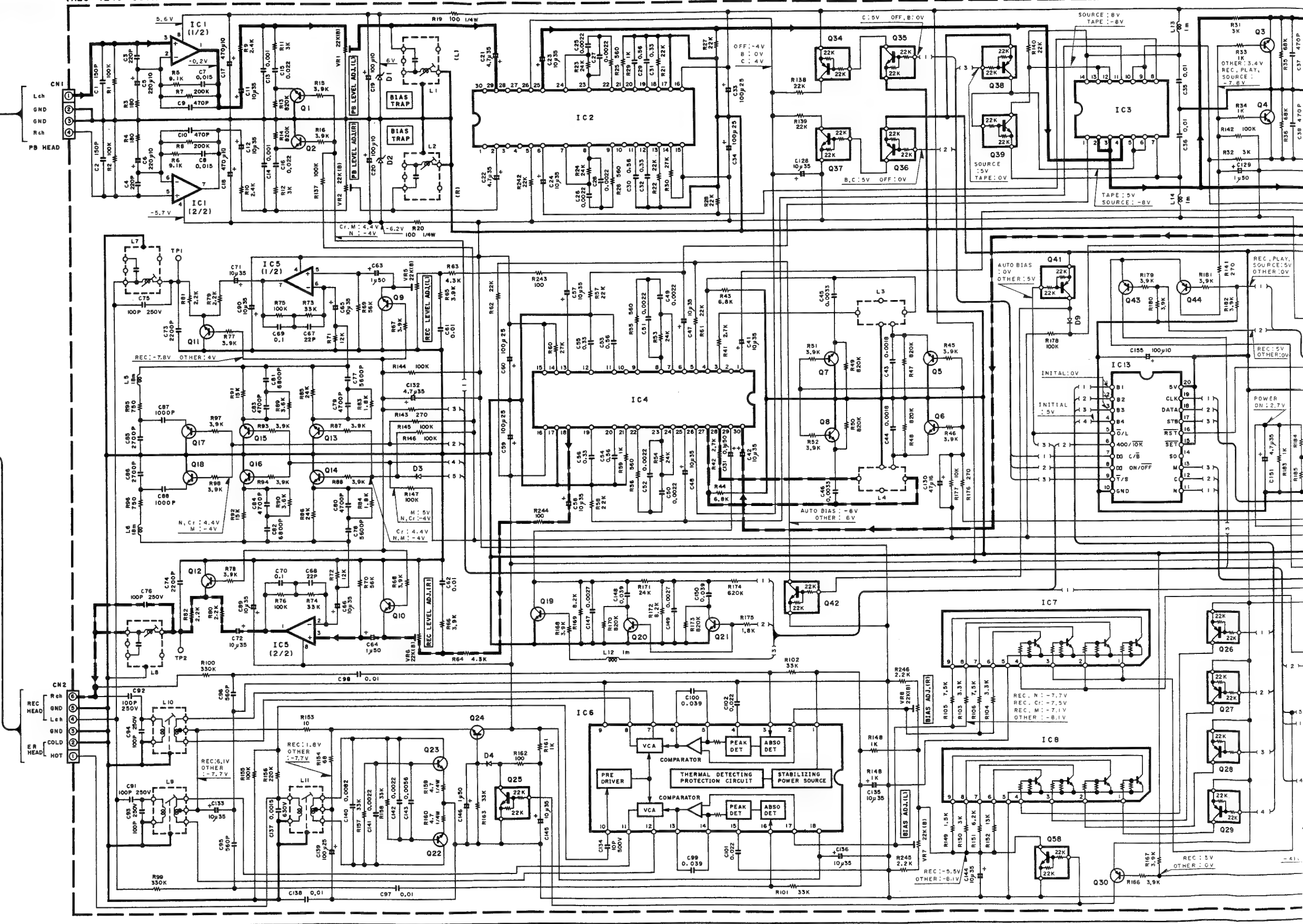
Q1,2,5-8,13-21,40,45-48,51,52 2SC1740S(Q,R) or 2SC945(A)(Q,P)
Q3,4,9-12 2SD1302(S,T) or 2SC2878(B)
Q22,23 2SD863(E,F)
Q24,49,50 2SC3246
Q25,35,37,39 4E,56
Q26-29,31-34,36,38,41 DTA124ES
Q30,43,44,53-56 DTA124ES
Q57 2SA433S(Q,R) or 2SA733(A)(Q,P)
Q57 2SB441(Q,P)

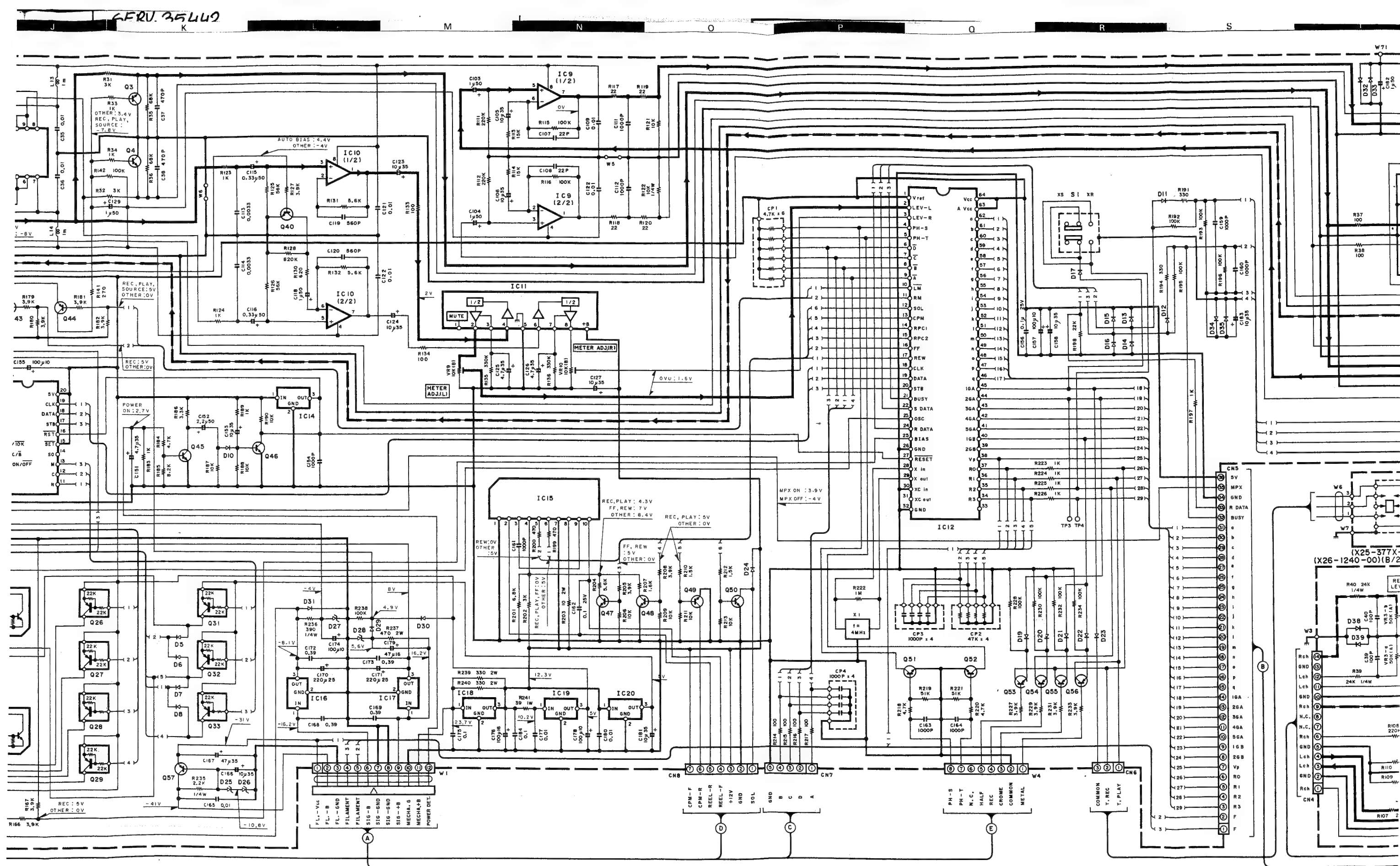
D1,2 RD6,8ES(B2) or H266.8N(B2)
D3-16,24,30 32-35
D17,19-23 M55104 or 1SS133
D24 S55668
D25 RD20J8(B2) or H2S205(B2)
D26 RD11ES(B2) or H2S11N(B2)
D27 RD3,4ES(B2) or H2S3,4N(B2)
D28 RD5,6ES(B2) or H2S5,6N(B2)
D31 1SS144

MECHA ASS'Y



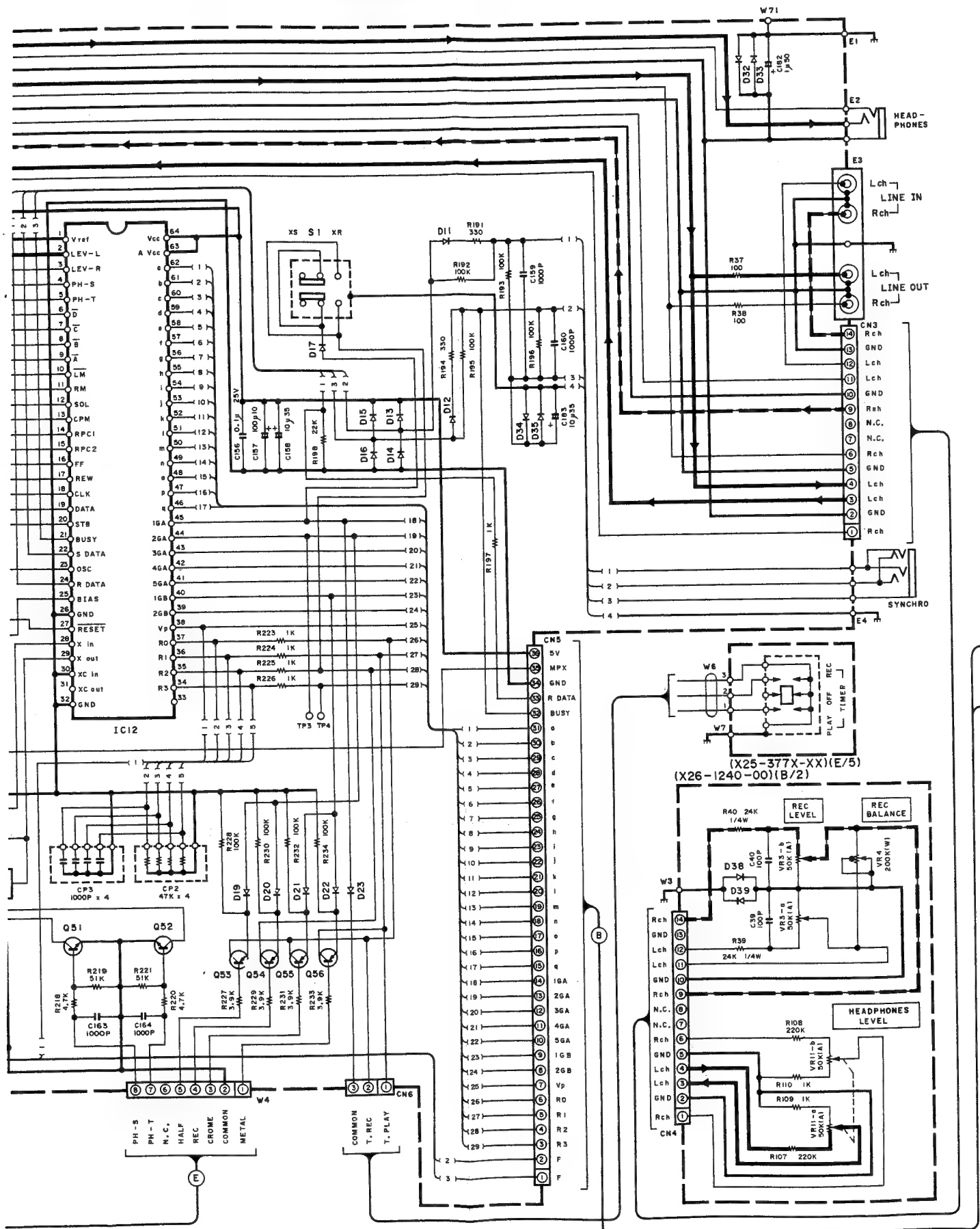
(X26-1240-00)(A/2)





CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Δ Indicates safety critical components. To reduce the risk of electric shock, leakage current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

DC voltages are as measured with a high impedance voltmeter with a cassette loaded at playback mode. Values may vary slightly due to variations between individual instruments or/and units. Bias circuit DC voltages are as measured while in the record mode.



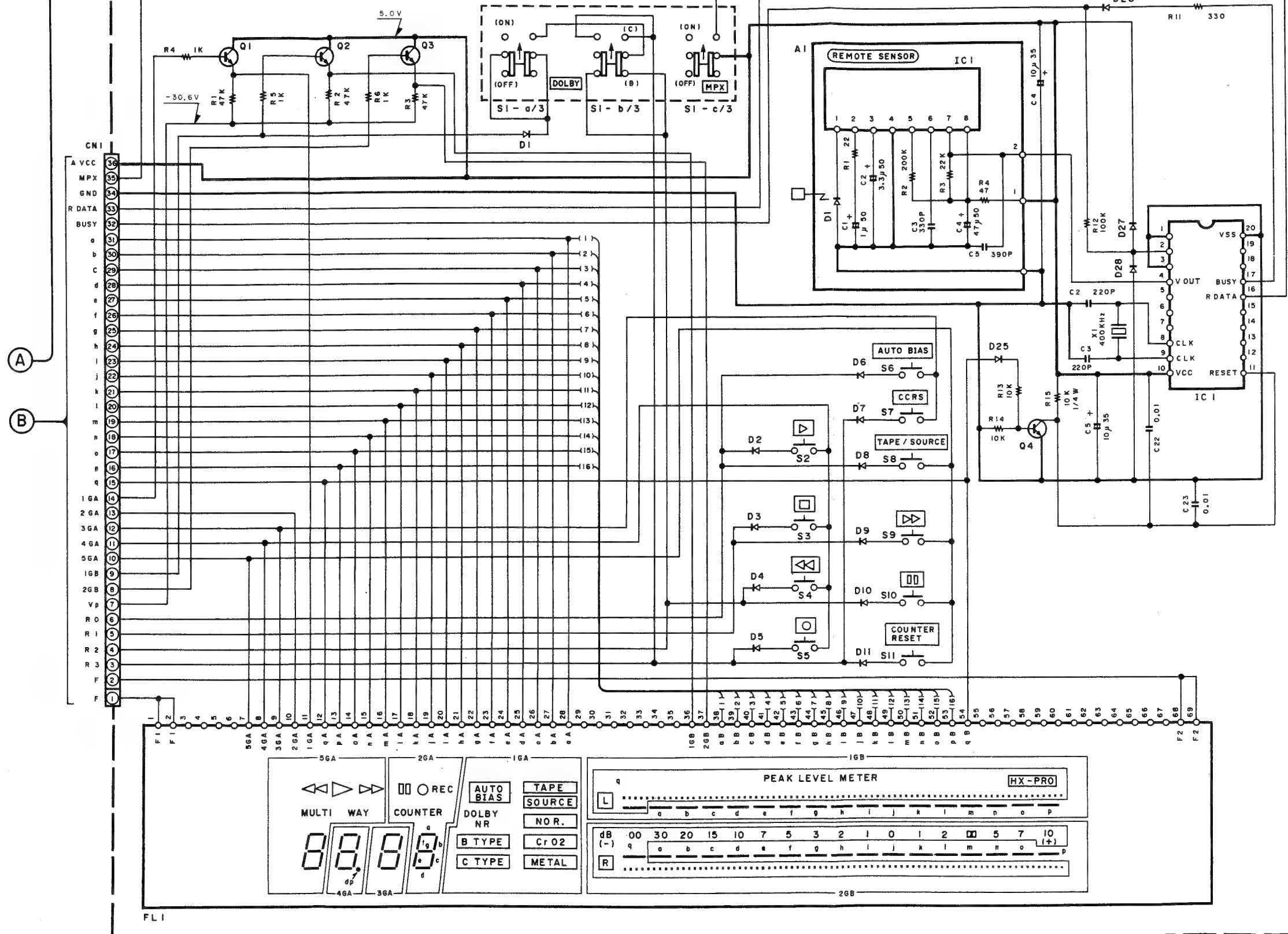
CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). **⚠** Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

DC voltages are as measured with a high impedance voltmeter with a cassette loaded at playback mode. Values may vary slightly due to variations between individual instruments or/and units. Bias circuit DC voltages are as measured while in the record mode.

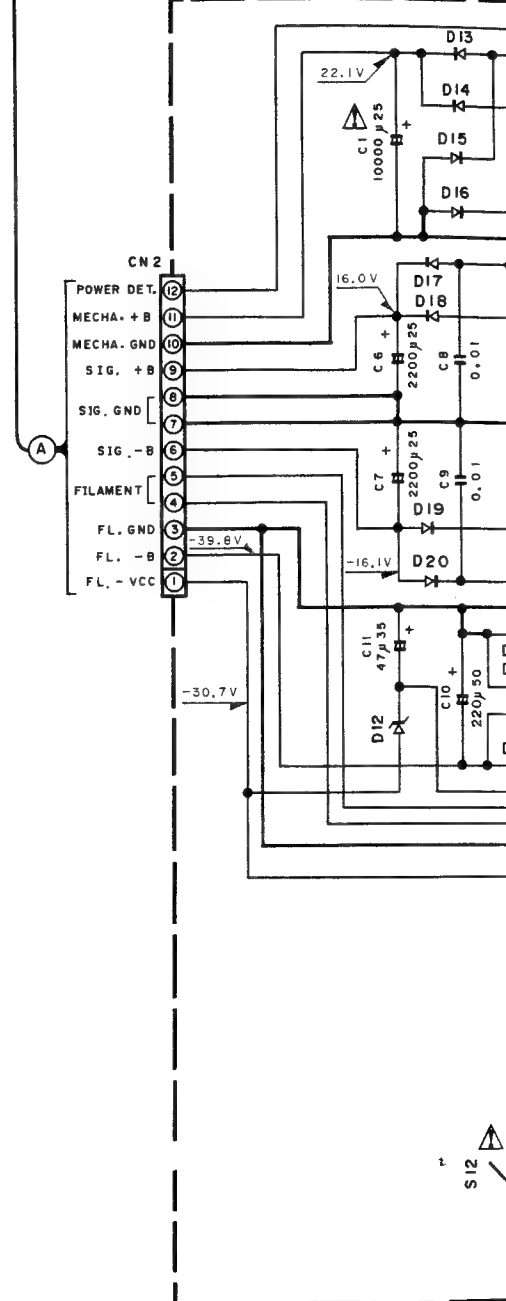
Y26-3010-11

KX-4520
KENWOOD

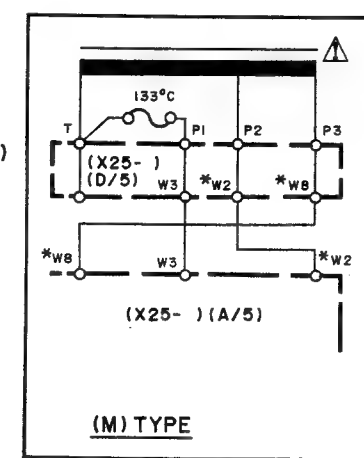
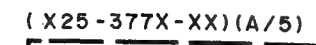
(X25-377X-XX)(B/5)



(X25-377X-XX)(A/5)



IC 1 : μ PD7564CS-113
D1 ~ 12 : HSS104A or ISS131
Q1 ~ 4 : 2SC1740S (Q, R) or 2SC1740A (Q, R)
FL 1 : B6-738GK
A1 : W02-0975-05

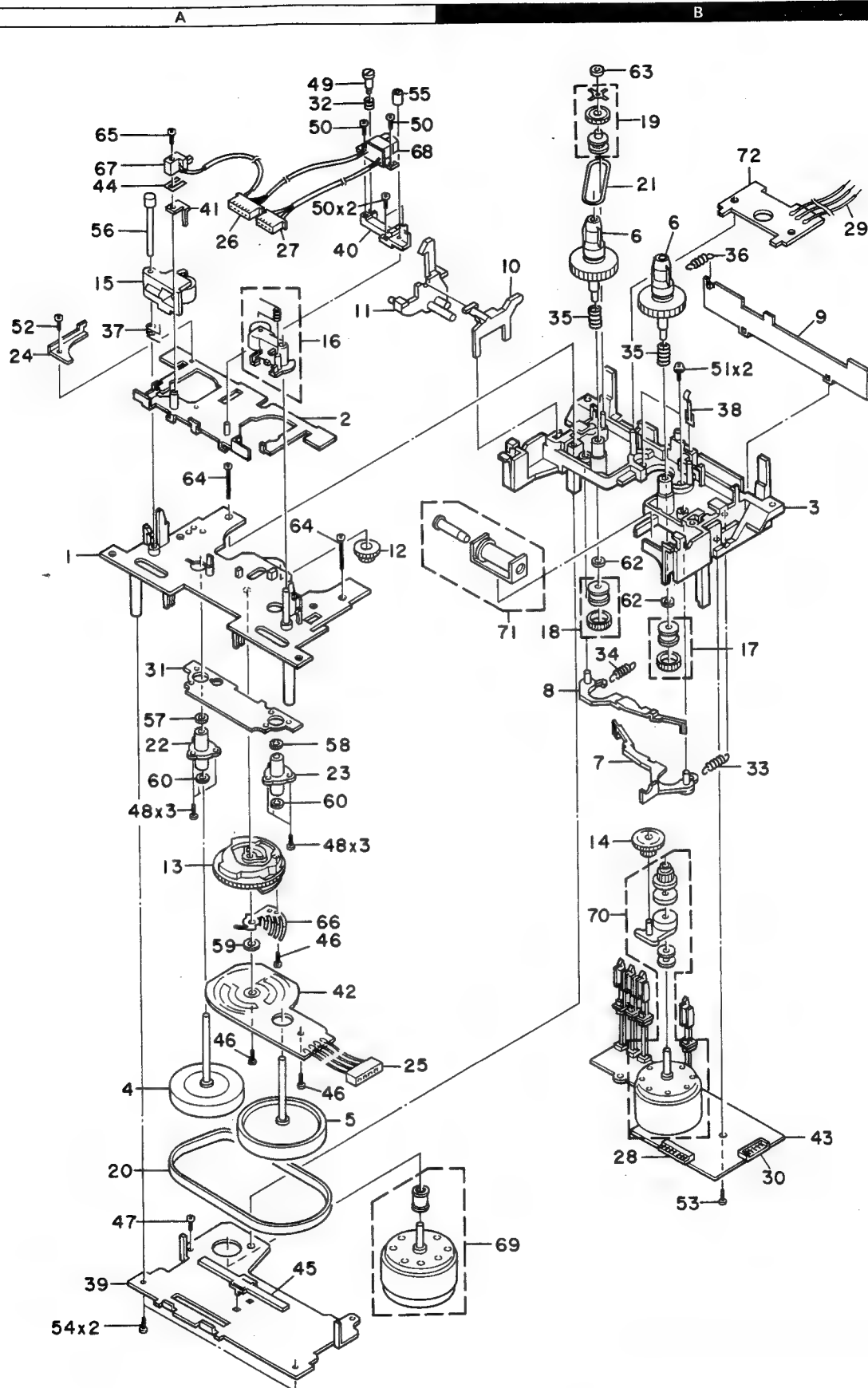


(K,P,E) TYPE

DC voltages are as measured with a high impedance voltmeter with a cassette loaded at playback mode. Values may vary slightly due to variations between individual instruments or/and units. Bias circuit DC voltages are as measured while in the record mode.

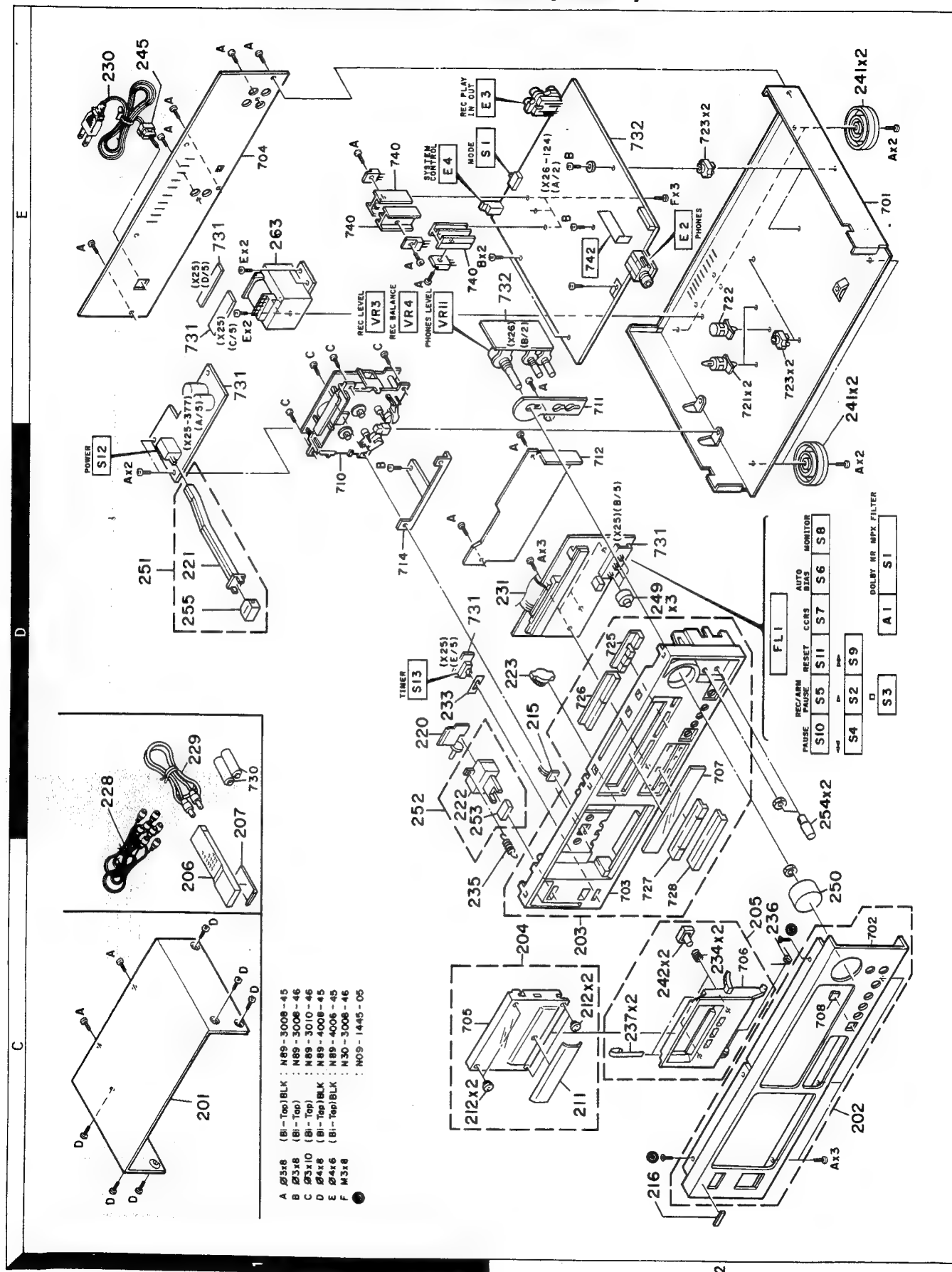
KX-4520

EXPLODED VIEW (MECHANISUM)



Parts with the exploded numbers larger than 700 are not supplied.

EXPLODED VIEW (UNIT)



Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

✱ New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Telle ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
KX-4520						
201	1C		A01-1765-01	METALLIC CABINET	KPMX TE	
202	2E	*	A20-5919-03	PANEL ASSY		
203	2C, 2D	*	A22-1147-01	SUB PANEL ASSY		
204	2C	*	A53-1166-03	CASSETTE LID ASSY		
204	2C	*	A53-1182-03	CASSETTE LID ASSY		
205	2C	*	A53-1168-03	CASSETTE HOLDER ASSY	KPMX TE	
206	1C	*	A70-0317-05	REMOTE CONTROLLER ASSY		
207	1C	*	A09-0076-08	BATTERY CASE		
211	2C	*	B03-2591-04	DRESSING PLATE		
211	2C	*	B03-2592-04	DRESSING PLATE		
212	2C	*	B07-1931-04	ESCUTCHEON	K X P E T	
215	2D		B30-1036-05	LED(SLF-601C)		
216	2C		B43-0287-04	KENWOOD BADGE		
-			B46-0092-03	WARRANTY CARD		
-			B46-0096-13	WARRANTY CARD		
-			B46-0121-03	WARRANTY CARD	PME M E	
-			B46-0122-13	WARRANTY CARD		
-			B46-0143-03	WARRANTY CARD		
-		*	B50-9909-00	INSTRUCTION MANUAL (ENGLISH)		
-		*	B50-9910-00	INSTRUCTION MANUAL (FRENCH)		
-		*	B50-9911-00	INSTRUCTION MANUAL (SPANISH)	M KPMX KP E	
-		*	B50-9912-00	INSTRUCTION MANUAL (G,D,I)		
220	1D	*	D10-2351-04	LEVER		
221	1D	*	D21-1550-03	EXTENSION SHAFT		
222	1D	*	D21-1551-04	EXTENSION SHAFT	M X T	
223	2D		D39-0176-05	DAMPER		
227	1E		E03-0102-25	AC INLET		
228	1D		E30-0505-05	AUDIO CORD		
229	1D		E30-0977-05	CORD WITH PLUG	M X T	
230	1E		E30-0181-05	AC POWER CORD		
230	1E		E30-0459-05	AC POWER CORD		
230	1C		E30-1329-05	AC POWER CORD (INLET)		
230	1E		E30-1341-05	AC POWER CORD		
230	1E		E30-1416-05	AC POWER CORD	M KPMX KP E	
231	2D	*	E31-7309-05	FLAT CABLE (36P)		
233	1D		F19-0576-04	BLIND PLATE		
234	2C		G01-2288-04	COMPRESSION SPRING		
235	2D	*	G01-2412-04	EXTENSION SPRING		
236	2C	*	G01-2413-04	TORSION COIL SPRING	M KPMX KP E	
237	2C	*	G02-0937-04	FLAT SPRING		
-		*	H01-8655-04	ITEM CARTON CASE		
-		*	H10-3909-02	POLYSTYRENE FOAMED FIXTURE		
-		*	H10-3910-02	POLYSTYRENE FOAMED FIXTURE	M KPMX KP E	
-			H20-0417-14	PROTECTION COVER(460X370X360)		
-			H25-0224-04	PROTECTION BAG (800X400X0.03)		
-			H25-0232-04	PROTECTION BAG (235X350X0.03)		
241	2D, 2E		J02-1002-05	FOOT	KPMX KP E	
242	1C		J11-0140-04	CLAMPER ASSY		
245	1E		J42-0083-05	POWER CORD BUSHING		
-			J61-0307-05	WIRE BAND		

E: Scandinavia & Europe K: USA P: Canada
 U: PX(Far East, Hawaii) T: England M: Other Areas
 UE: AAFES(Europe) X: Australia

⚠ indicates safety critical components.

PARTS LIST

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
249	2D	*	K27-2003-04	KNØB DØLBY,MPX		
250	1C	*	K29-3804-04	KNØB REC LEVEL		
251	1D	*	K29-3805-04	KNØB ASSY POWER		
252	1D	*	K29-3806-04	KNØB ASSY EJECT		
253	1D	*	K29-3807-04	KNØB EJECT		
254	2D	*	K29-3833-04	KNØB REC BALANCE,PHONES LEVEL		
255	1D		K29-3835-04	KNØB POWER		
263	1E	*	L07-0011-05	POWER TRANSFORMER	KP XTE M	
263	1E	*	L07-0012-05	POWER TRANSFORMER		
263	1E	*	L07-0013-05	POWER TRANSFORMER		
A	1C,1E		N89-3008-45	BINDING HEAD TAPTITE SCREW		
B	1C,1D		N89-3008-46	BINDING HEAD TAPTITE SCREW		
C	1C,1E		N89-3010-46	BINDING HEAD TAPTITE SCREW		
D	1C		N89-4008-45	BINDING HEAD TAPTITE SCREW		
E	1C,1E		N86-4006-45	BINDING HEAD TAPTITE SCREW		
DISPLAY UNIT (X25-3770-00)						
C1		*	C90-1791-05	ALMINIUM ELECTROLYTIC C.		
C2 ,3			CC45FSL1H221J	CERAMIC 220PF J		
C4 ,5			CE04KW1V100M	ELECTRO 10UF 35WV		
C6 ,7			CE04KW1E222M	ELECTRO 2200UF 25WV		
C8 ,9			CF92FV1H103J	MF 0.010UF J		
C10			CE04KW1H221M	ELECTRO 220UF 50WV	KPXTE M	
C11			CE04KW1V470M	ELECTRO 47UF 35WV		
C12 -15			CF92FV1H103J	MF 0.010UF J		
C18			C91-0971-05	FILM 0.01UF 250WV		
C20			C91-0971-05	FILM 0.01UF 250WV		
C20 ,21			C91-0971-05	FILM 0.01UF 250WV	M	
C22 ,23			CK45FF1H103Z	CERAMIC 0.010UF Z		
L1			L40-1011-17	SMALL FIXED INDUCTOR(100UH,K)		
X1			L78-0202-05	RESONATOR (400KHZ)		
R9			RS14KB3D182J	FL-PROOF RS 1.8K J 2W		
S1		*	S42-3116-05	MULTIPLE PUSH SWITCH		
S2 -11			S40-1064-05	PUSH SWITCH		
S12		*	S40-1149-05	PUSH SWITCH (POWER TYPE)		
S13			S31-1030-05	SLIDE SWITCH		
D1 -11			HSS104A	DIODE		
D1 -11			1SS131	DIODE		
D12			HZS6.2N(B2)	ZENER DIODE		
D12			RD6.2ES(B2)	ZENER DIODE		
D13 -24			S5566B	DIODE		
D25 -30			HSS104A	DIODE		
D25 -30			1SS131	DIODE		
FL1		*	BG-738GK	FLUORESCENT INDICATOR TUBE		
IC1		*	UPD7564CS-113	IC(MICROPROCESSOR)		
Q1 -4			2SC1740S(Q,R)	TRANSISTOR		
Q1 -4			2SC945(A)(Q,P)	TRANSISTOR		
A1			W02-0975-05	ELECTRIC CIRCUIT MODULE		
CASSETTE UNIT (X26-1240-00)						
C1 ,2			CQ09FS1H151J	POLYSTY 150PF J		
C3 ,4			CC45FSL1H221J	CERAMIC 220PF J		
C5 ,6			CE04KW1A221M	ELECTRO 220UF 10WV		

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C7 ,8			CF92FV1H153J	MF 0.015UF J		
C9 ,10			CF92FV1H471J	MF 470PF J		
C11 ,12			CE04KW1V100M	ELECTRO 10UF 35WV		
C13 ,14			CF92FV1H102J	MF 1000PF J		
C15 ,16			CF92FV1H223J	MF 0.022UF J		
C17 ,18			CE04KW1A471M	ELECTRO 470UF 10WV		
C19 ,20			CE04KW1A101M	ELECTRO 100UF 10WV		
C21 ,22			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C23 ,24			CE04KW1V100M	ELECTRO 10UF 35WV		
C25 -28			CF92FV1H222J	MF 2200PF J		
C29 ,30			CF92FV1H564J	MF 0.56UF J		
C31 ,32			CF92FV1H334J	MF 0.33UF J		
C33 ,34			CE04KW1E101M	ELECTRO 100UF 25WV		
C35 ,36			CF92FV1H103J	MF 0.010UF J		
C37 ,38			CF92FV1H471J	MF 470PF J		
C39 ,40			CF92FV1H101K	MF 100PF K		
C41 ,42			CE04KW1V100M	ELECTRO 10UF 35WV		
C43 ,44			CF92FV1H182J	MF 1800PF J		
C45 ,46			CF92FV1H332J	MF 3300PF J		
C47 ,48			CE04KW1V100M	ELECTRO 10UF 35WV		
C49 -52			CF92FV1H222J	MF 2200PF J		
C53 ,54			CF92FV1H564J	MF 0.56UF J		
C55 ,56			CF92FV1H334J	MF 0.33UF J		
C57 ,58			CE04KW1V100M	ELECTRO 10UF 35WV		
C59 ,60			CE04KW1E101M	ELECTRO 100UF 25WV		
C61 ,62			CF92FV1H103J	MF 0.010UF J		
C63 ,64			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C65 ,66			CE04KW1V100M	ELECTRO 10UF 35WV		
C67 ,68			CC45FSL1H220J	CERAMIC 22PF J		
C69 ,70			CF92FV1H104J	MF 0.10UF J		
C71 ,72			CE04KW1V100M	ELECTRO 10UF 35WV		
C73 ,74			CF92FV1H222J	MF 2200PF J		
C75 ,76			C91-0355-05	POLYSTY 100PF J		
C77 ,78			CF92FV1H562J	MF 5600PF J		
C79 ,80			CF92FV1H472J	MF 4700PF J		
C81 ,82			CF92FV1H682J	MF 6800PF J		
C83 ,84			CF92FV1H472J	MF 4700PF J		
C85 ,86			CF92FV1H272J	MF 2700PF J		
C87 ,88			CF92FV1H102J	MF 1000PF J		
C89 ,90			CE04KW1V100M	ELECTRO 10UF 35WV		
C91 -94			C91-0355-05	POLYSTY 100PF J		
C95 ,96			CK45FB1H561K	CERAMIC 560PF K		
C97 ,98			CF92FV1H103J	MF 0.010UF J		
C99 ,100			CF92FV1H393J	MF 0.039UF J		
C101,102			CF92FV1H223J	MF 0.022UF J		
C103,104			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C105,106			CE04KW1V100M	ELECTRO 10UF 35WV		
C107,108			CC45FSL1H220J	CERAMIC 22PF J		
C109,110			CF92FV1H103J	MF 0.010UF J		
C111,112			CK45FB1H102K	CERAMIC 1000PF K		
C113,114			CF92FV1H332J	MF 3300PF J		
C115,116			CE04KW1HR33M	ELECTRO 0.33UF 50WV		
C118			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C119,120			CK45FB1H561K	CERAMIC 560PF K		
C121,122			CF92FV1H103J	MF 0.010UF J		

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C123, 124 C125, 126 C127, 128 C129 C130			CE04KW1V100M CE04KW1V4R7M CE04KW1V100M CE04KW1H010M CE04KW1C470M	ELECTR0 10UF 35WV ELECTR0 4.7UF 35WV ELECTR0 10UF 35WV ELECTR0 1.0UF 50WV ELECTR0 47UF 16WV		
C131 C132 C133 C134 C135, 136			CE04KW1H0R1M CE04KW1V4R7M CE04KW1V100M CC45PSL2H100D CE04KW1V100M	ELECTR0 0.1UF 50WV ELECTR0 4.7UF 35WV ELECTR0 10UF 35WV CERAMIC 10PF D ELECTR0 10UF 35WV		
C137 C138 C139 C140 C141, 142			C91-0775-05 CK45FF1H103Z CE04KW1E101M CF92FV1H822J CF92FV1H222J	POLYPR0 1500PF J CERAMIC 0.010UF Z ELECTR0 100UF 25WV MF 8200PF J MF 2200PF J		
C143 C144, 145 C146 C147 C148			CF92FV1H562J CE04KW1V100M CE04KW1H010M CF92FV1H272J CF92FV1H393J	MF 5600PF J ELECTR0 10UF 35WV ELECTR0 1.0UF 50WV MF 2700PF J MF 0.039UF J		
C149 C150 C151 C152 C153			CF92FV1H272J CF92FV1H393J CE04KW1V4R7M CE04KW1H2R2M CE04KW1V100M	MF 2700PF J MF 0.039UF J ELECTR0 4.7UF 35WV ELECTR0 2.2UF 50WV ELECTR0 10UF 35WV		
C154 C155 C156 C157 C158			CK45FB1H102K CE04KW1A101M C91-0700-05 CE04KW1A101M CE04KW1V100M	CERAMIC 1000PF K ELECTR0 100UF 10WV CERAMIC 0.1UF J ELECTR0 100UF 10WV ELECTR0 10UF 35WV		
C159-161 C162 C163, 164 C165 C166			CK45FB1H102K C91-0700-05 CK45FB1H102K CK45FF1H103Z CE04KW1V100M	CERAMIC 1000PF K CERAMIC 0.1UF J CERAMIC 1000PF K CERAMIC 0.010UF Z ELECTR0 10UF 35WV		
C167 C168, 169 C170, 171 C172, 173 C174			CE04KW1V470M CF92FV1H394J CE04KW1E221M CF92FV1H394J CE04KW1A101M	ELECTR0 47UF 35WV MF 0.39UF J ELECTR0 220UF 25WV MF 0.39UF J ELECTR0 100UF 10WV		
C175 C176 C177 C178 C179			CF92FV1H104J CE04KW1C101M CK45FF1H103Z CE04KW1A101M CE04KW1C470M	MF 0.10UF J ELECTR0 100UF 16WV CERAMIC 0.010UF Z ELECTR0 100UF 10WV ELECTR0 47UF 16WV		
C180 C181 C182 C183 C184			CK45FF1H103Z CE04KW1V100M CE04KW1H010M CE04KW1V100M CF92FV1H104J	CERAMIC 0.010UF Z ELECTR0 10UF 35WV ELECTR0 1.0UF 50WV ELECTR0 10UF 35WV MF 0.10UF J		
CN5 E2 E3 E4		*	E10-3603-05 E11-0189-05 E13-0482-05 E11-0188-05	FLAT CABLE CONNECTOR PHONE JACK PHONE JACK MINIATURE PHONE JACK		

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L1 ,2 L3 ,4 L5 ,6 L7 ,8 L9 ,10		*	L39-0190-05 L79-0792-05 L40-1835-29 L39-0190-05 L32-0369-05	TRAP COIL LC FILTER SMALL FIXED INDUCTOR(18MH,G) TRAP COIL BIAS OSCILATING COIL		
L11 L12 -14 X1		*	L32-0386-05 L40-1021-14 L78-0244-05	OSCILATING COIL SMALL FIXED INDUCTOR(1.0MH,K) RESONATOR (4MHz)		
A F	2E 1E		N89-3008-45 N30-3008-46	BINDING HEAD TAPTITE SCREW PAN HEAD MACHINE SCREW		
CP1 CP2 CP3 ,4 R153 R154		*	R90-0811-05 R90-0487-05 R90-0478-05 R92-0219-05 R92-0226-05	MULTIPLE RESISTOR MULTI-COMP 47KX4 J 1/6W MULTI-COMP 1000PX4 J 1/6W FUSE RESIST 10 G 1/4W FUSE RESIST 68 G 1/4W		
R203 R237 R239,240 R241 VR1 ,2			RS14KB3D100J RS14KB3D471J RS14KB3D331J RS14KB3A390J R12-3128-05	FL-PROOF RS 10 J 2W FL-PROOF RS 470 J 2W FL-PROOF RS 330 J 2W FL-PROOF RS 39 J 1W TRIMMING POT.(22KB)		
VR3 VR4 VR5 -8 VR9 ,10 VR11		*	R06-4080-05 R01-5069-05 R12-3128-05 R12-3126-05 R06-4081-05	POTENTIOMETER(50KAX2)REC LEVEL POTENTIOMETER(200K)REC BALANCE TRIMMING POT.(22KB) TRIMMING POT.(10KB) POTENTIOMETER(50KAX2)PHONE LEV		
S1			S31-2094-05	SLIDE SWITCH		
D1 ,2 D1 ,2 D3 -16 D3 -16 D17			HZS6.8N(B2) RD6.8ES(B2) HSS104 1SS133 HSS104A	ZENER DIODE ZENER DIODE DIODE DIODE DIODE		
D17 D19 -23 D19 -23 D24 D25			1SS131 HSS104A 1SS131 S5566B HZS20S(B2)	DIODE DIODE DIODE DIODE ZENER DIODE		
D25 D26 D26 D27 D27			RD20JS(B2) HZS11N(B2) RD11ES(B2) HZS3.9N(B2) RD3.9ES(B2)	ZENER DIODE ZENER DIODE ZENER DIODE ZENER DIODE ZENER DIODE		
D28 D28 D29 ,30 D29 ,30 D31			HZS5.6N(B2) RD5.6ES(B2) HSS104 1SS133 1SS199	ZENER DIODE ZENER DIODE DIODE DIODE DIODE		
D32 -35 D32 -35 D38 ,39 D38 ,39 IC1			HSS104 1SS133 HSS104 1SS133 M5220P	DIODE DIODE DIODE DIODE IC(OP AMP X2)		
IC2 IC3		*	CXA1330S MB84066BM	IC(DOLBY B/C) IC(BILATERAL SWITCH X4)		

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IC3			UPD4066BC	IC(BILATERAL SWITCH X4)		
IC4		*	CXA1330S	IC(DOLBY B/C)		
IC5			M5218P	IC(OP AMP X2)		
IC5			NJM4558D	IC(OP AMP X2)		
IC6			UPC1297CA	IC(DOL HX PRO SYSTEM)		
IC7 ,8			TD62554S	IC(4CH TRANSISTOR ARRAY)		
IC9			M5218L	IC(OP AMP X2)		
IC10			M5218P	IC(OP AMP X2)		
IC10			NJM4558D	IC(OP AMP X2)		
IC11			BA6138	IC(ROOT AMP X2)		
IC12		*	M50941-317SP	IC(MICROPROCESSOR)		
IC13			CXD1067P	IC(SERIAL-PARALLEL CONVERTER)		
IC14			M51951ASL	IC(SYSTEM RESET)		
IC14			PST529D	IC(SYSTEM RESET)		
IC15			BA6229	IC(MOTOR DRIVER)		
IC16		*	AN7908F	IC(VOLTAGE REGULATOR -8V/1A)		
IC16		*	UPC7908HF	IC(VOLTAGE REGULATOR/ -8V/1A)		
IC17		*	AN7808F	IC(VOLTAGE REGULATOR/ +8V/1A)		
IC17		*	UPC7808HF	IC(VOLTAGE REGULATOR +8V/1A)		
IC18			UPC7812H	IC(VOLTAGE REGULATOR/ +12V)		
IC18			UPC7812HF	IC(VOLTAGE REGULATOR/ +12V)		
IC19			UPC7805H	IC(VOLTAGE REGULATOR/ +5V)		
IC19			UPC7805HF	IC(VOLTAGE REGULATOR/ +5V)		
IC20			NJM78L05A	IC(VOLTAGE REGULATOR/ +5V)		
IC20			UPC78L05J	IC(VOLTAGE REGULATOR/ +5V)		
Q1 ,2			2SC1740S(Q,R)	TRANSISTOR		
Q1 ,2			2SC945(A)(Q,P)	TRANSISTOR		
Q3 ,4			2SC2878(B)	TRANSISTOR		
Q3 ,4			2SD1302(S,T)	TRANSISTOR		
Q5 -8			2SC1740S(Q,R)	TRANSISTOR		
Q5 -8			2SC945(A)(Q,P)	TRANSISTOR		
Q9 -12			2SC2878(B)	TRANSISTOR		
Q9 -12			2SD1302(S,T)	TRANSISTOR		
Q13 -21			2SC1740S(Q,R)	TRANSISTOR		
Q13 -21			2SC945(A)(Q,P)	TRANSISTOR		
Q22 ,23			2SD863(E,F)	TRANSISTOR		
Q24			2SC3246	TRANSISTOR		
Q25			DTC124ES	DIGITAL TRANSISTOR		
Q26 -29			DTA124ES	DIGITAL TRANSISTOR		
Q30			2SA733(A)(Q,P)	TRANSISTOR		
Q30			2SA933S(Q,R)	TRANSISTOR		
Q31 -34			DTA124ES	DIGITAL TRANSISTOR		
Q35			DTC124ES	DIGITAL TRANSISTOR		
Q36			DTA124ES	DIGITAL TRANSISTOR		
Q37			DTC124ES	DIGITAL TRANSISTOR		
Q38			DTA124ES	DIGITAL TRANSISTOR		
Q39			DTC124ES	DIGITAL TRANSISTOR		
Q40			2SC1740S(Q,R)	TRANSISTOR		
Q40			2SC945(A)(Q,P)	TRANSISTOR		
Q41			DTA124ES	DIGITAL TRANSISTOR		
Q42			DTC124ES	DIGITAL TRANSISTOR		
Q43 ,44			2SA733(A)(Q,P)	TRANSISTOR		
Q43 ,44			2SA933S(Q,R)	TRANSISTOR		
Q45 -48			2SC1740S(Q,R)	TRANSISTOR		
Q45 -48			2SC945(A)(Q,P)	TRANSISTOR		

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Q49 ,50 Q51 ,52 Q51 ,52 Q53 -56 Q53 -56			2SC3246 2SC1740S(Q,R) 2SC945(A)(Q,P) 2SA733(A)(Q,P) 2SA933S(Q,R)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q57 Q58			2SB941(Q,P) DTC124ES	TRANSISTOR DIGITAL TRANSISTOR		
MECHANISM ASSY						
1	2A	*	A10-2708-08	CHASSIS CALKED ASSY		
2	1A	*	A10-2709-08	HEAD CHASSIS CALKED ASSY		
3	1B, 2B	*	A11-0674-08	SHAFT CHASSIS ASSY		
4	3A	*	D01-0121-08	FLYWHEEL ASSY		
5	3A	*	D01-0122-08	FLYWHEEL ASSY		
6	1B	*	D03-0282-08	REEL DISK ASSY		
7	2B	*	D10-2427-08	ASSIST LEVER (A)		
8	2B	*	D10-2428-08	ASSIST LEVER (B)		
9	1B	*	D10-2429-08	CASSETTE LEVER		
10	1B	*	D10-2430-08	LEVER		
11	1A, 1B	*	D10-2431-08	EJECT LEVER		
12	2A	*	D13-0873-08	ASSIST GEAR		
13	2A	*	D13-0874-08	CAM GEAR		
14	2B	*	D13-0875-08	IDLER GEAR		
15	1A	*	D14-0318-08	PINCH ROLLER ASSY (S)		
16	1A	*	D14-0319-08	PINCH ROLLER ASSY (RIGHT)		
17	2B	*	D15-0306-08	BRAKE PULLEY ASSY (WHITE)		
18	2B	*	D15-0307-08	BRAKE PULLEY ASSY (BLACK)		
19	1B	*	D15-0308-08	PULLEY ASSY		
20	3A	*	D16-0299-08	MAIN BELT		
21	1B	*	D16-0300-08	REEL BELT		
22	2A	*	D23-0263-08	CAPSTAN RETAINER ASSY		
23	2A	*	D23-0264-08	CAPSTAN RETAINER ASSY		
24	1A	*	D32-0191-08	STOPPER		
25	3A	*	E31-7582-08	CONNECTING WIRE		
26	1A	*	E31-7583-08	CONNECTING WIRE		
27	1A	*	E31-7584-08	CONNECTING WIRE		
28	3B	*	E31-7585-08	CONNECTING WIRE		
29	1B	*	E31-7587-08	FLAT WIRE		
30	3B	*	E40-3305-08	PIN CONNECTOR		
31	2A	*	F39-0053-08	REINFORCING PARTS		
32	1A	*	G01-2466-08	COMPRESSION SPRING		
33	2B	*	G01-2467-08	TENSION SPRING (BLUE)		
34	2B	*	G01-2468-08	TENSION SPRING (WHITE)		
35	1B	*	G01-2469-08	COMPRESSION SPRING		
36	1B	*	G01-2470-08	TENSION SPRING		
37	1A	*	G01-2471-08	TORSION SPRING		
38	1B	*	G02-0959-08	FLAT SPRING		
39	3A	*	J21-5598-08	MOUNTING HARDWARE (MOTOR)		
40	1A	*	J21-5599-08	MOUNTING HARDWARE (HEAD BLOCK)		
41	1A	*	J21-5600-08	MOUNTING HARDWARE (ERASE HEAD)		
42	3A	*	J25-6391-08	PRINTED WIRING BOARD (CONTROL)		
43	3B	*	J25-6392-08	PRINTED WIRING BOARD		
44	1A	*	J30-0274-08	SPACER (ERASE HEAD)		
45	3A	*	J39-0158-08	SPACER		
46	3A	*	N09-2757-08	SCREW M2X3		

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47	3A	*	N09-2758-08	SCREW M2.6X3		
48	2A	*	N09-2759-08	SCREW M2X8		
49	1B	*	N09-2760-08	SCREW		
50	1A	*	N09-2761-08	SCREW M2X5		
51	1B	*	N09-2762-08	SCREW M2.6X1.6		
52	1A	*	N09-2763-08	SCREW M2X2.5		
53	3B	*	N09-2764-08	SCREW M2.6X8		
54	3A	*	N09-2765-08	SCREW M2.6X8		
55	1A	*	N14-0189-08	NUT		
56	1A	*	N14-0190-08	NUT		
57	2A	*	N19-1235-08	FLAT WASHER /2.5X7X0.8		
58	2A	*	N19-1236-08	FLAT WASHER /2.2X7X0.8		
59	2A	*	N19-1237-08	FLAT WASHER /3X8X0.5		
60	2A	*	N19-1238-08	FLAT WASHER /2.6X4.7X0.5		
61	1B	*	N19-1239-08	FLAT WASHER		
62	2B	*	N19-1240-08	FLAT WASHER /2.6X5.5X0.13		
63	1B	*	N19-1241-08	FLAT WASHER		
64	2A	*	N30-2630-46	PAN HEAD MACHINE SCREW M2.6X30		
65	1A	*	N35-2012-46	BINDING HEAD MACHINE SCREW		
66	2A	*	S90-0112-08	SWITCH WAFERS		
67	1A		T32-0309-05	ERASE HEAD		
68	1A	*	T34-0333-15	REC/PLAY HEAD		
69	3A	*	T42-0560-08	DC MOTOR ASSY (CAPSTAN)		
70	3B	*	T42-0561-08	DC MOTOR ASSY (REEL)		
71	2B	*	T94-0219-08	SOLENOID		
72	2B	*	T95-0118-08	PHOTO ISOLATOR		

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KX-4520

SPECIFICATIONS

Track system	4-track, 2-channel stereo
Recording system	AC bias system (Bias frequency 210 kHz)
Heads	Record/play (Hard permalloy combination head) × 1 Erase (Double-gap ferrite head) × 1
Motors	Capstan drive motor × 1 Reel drive motor × 1
Wow and flutter	0.05% (W.R.M.S.) ±0.16% (DIN)
Fast winding time	Approx. 90 seconds (C-60)
Frequency response	
Normal tape:	20 to 17,000 Hz, ±3 dB
Chrome tape:	20 to 18,000 Hz, ±3 dB
Metal tape:	20 to 19,000 Hz, ±3 dB

Signal-to-noise ratio	73 dB (Dolby C NR ON) (Metal tape) 66 dB (Dolby B NR ON) (Metal tape) 58 dB (Dolby NR OFF) (Metal tape)
Distortion	0.8% (at 1 kHz, 0 dB, 3rd H.D. with metal tape)
Inputs	Line: 77.5 mV/50 kΩ
Outputs	Line: 490 mV/3 kΩ Headphones: 0.85 mW/8 Ω

General

Power consumption	27 W
Dimensions	W: 440 mm (17-5/16") H: 127 mm (5") D: 321 mm (12-5/8")
Weight (Net)	5.2 kg (11.5 lb)

Kenwood follows a policy of continuous advancements in development.

For this reason specifications may be changed without notice.

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Noise reduction circuit made under license from Dolby Laboratories Licensing Corporation.

Kenwood poursuit une politique de progrès constants en ce qui concerne le développement.

Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

La marque DOLBY et le double "D" sont des marques déposées des Dolby Laboratories.

Le système de réduction du bruit de fond est fabriqué sous licence des Dolby Laboratories.

Kenwood strebt ständige Verbesserungen in der Entwicklung an.

Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

DOLBY und Doppel-D-Symbol sind eingetragene Warenzeichen der Dolby Laboratories.

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Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the U.S.A. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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